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A ROT-PROOF MILITARY SANDBAG*

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It appears that a rot-proof sandbag is entirely feasible at an overall cost which would be competitive with any available substitute for jute burlap. A higher initial price has acted as a deterrent to the adoption of such a bag even though the need for it has been felt for some time. However, investigations currently being conducted by the Engineer Research and Development Laboratories in collaboration with the textile industry are expected to remove this last barrier.

SANDBAGS have long been used in military combat operations in the construction of extemporized field fortifications and in building revetments employed in emergency repairs to bridges and roads along the routes of military supplies.

The suitability of sandbags for these purposes lies in the fact that, when filled with any available mineral soil, they form a convenient building unit for construction involving a minimum of time and skill, and affording an effective protection against small-arms fire and various shrapnel. Moreover, when empty, bags are light in weight, occupy little space, and are easily transported in quantity.

Sandbags have been commonly fabricated of relatively inexpensive cellulosic textile fabrics, viz, jute burlap and cotton cloth, which are very susceptible to rot when in contact with soil. The use of such a nondurable material was satisfactory only because sandbags were originally intended for emergency purposes of a strictly temporary nature, such as might arise among ground troops engaged in mobile maneuvers. Although long life in service was not a requisite for sandbags, it was deemed necessary to provide a rot-resistant treatment to insure that the bags would be serviceable when needed—even after outdoor storage under the most adverse condition.

The need for such a treatment prompted one of the first research investigations by the Armed Services in microbiological degradation. This work, initiated early in 1941, was supported and coordinated by the Corps of Engineers, US Army. The purpose was to evaluate available preservative treatments for increasing the resistance to rot of sandbag materials.

The program continued for a period of two years, during which time 30 to 40 treatments were evaluated in pure culture, soil burial, and weather-exposure tests. A result of this work was the adoption of a treatment which increased the service life of sandbags by 10-15 fold. Copper naphthenate was selected as the preferred treatment for sandbag fabrics with the copper ammonium complexes of carbonate, hydroxide, or flouride as satisfactory alternates. This work formed the basis for the preparation of an Army specification covering the mildewproofing of fabrics, threads, and cordage. Approximately 250,000,000 yards of sandbag fabrics were treated in accordance with this specification during World War II. It has been estimated that a saving of some $100,000,000 and an inestimable savings in highly critical fabrics resulted from the increased service life obtained from the treated sandbags.

The more recent military operations in Korea have pointed up the need for a sandbag of much longer service life than can be expected from the currently standard jute burlap bag. Durability has become an increasingly important requirement for sandbags for military use. See Figures 1, 2 and 3. This is indicated by what appears to be an enormous increase in the use of sandbags. A considerable number of the bags shipped to Korea were used for building semipermanent structures in and around base installations in rear areas. The numbers

Figure 1
United States gun crew keeps a sharp lookout for enemy planes at an airstrip somewhere in Korea—13 July 1950

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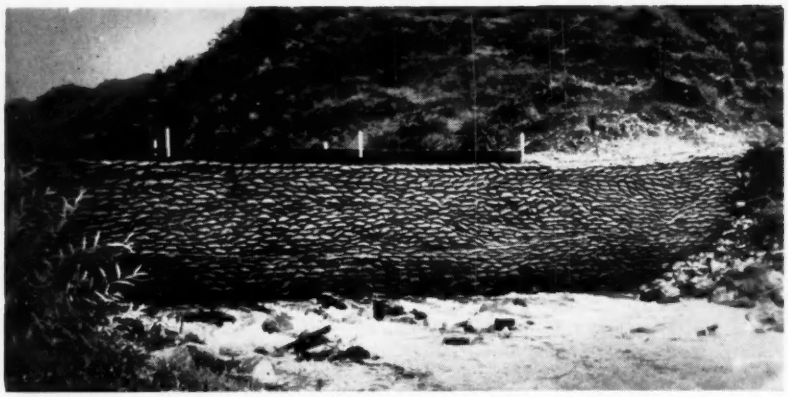

Figure 2
Rainwater flows through drainpipes in road built by Company C, 116th Engineer Combat Battalion, 8th Army, north of Hang-ye, Korea—20 July 1951

of bags used, the use made of them, and the reactions from the field all indicate a need for bags of considerable service life.

During World War II and the first two years of hostilities in Korea, the Armed Services of the United States purchased over 567 million sandbags at an initial cost estimated at over 113 million dollars. These bags have been computed to be equivalent to 115,300 tons of cargo with a cubage of 11.86 million cubic feet. In World War II sandbags were used at a rate of 103 million per year, and in the first two years of military operations in Korea, at the rate of 77 million per year. This rate of sandbag use would appear to be without precedent in the history of American military operations prior to 1941.

Moreover, if one considers the number of troops involved between 1941 and 1945 compared with the numbers involved in Korea, it would seem that the employment of sandbags for a given scale of military operations is increasing at a rapid rate. Even these figures are not a complete measure of the increased need for sandbags since the service life of the bags used during this period had been lengthened at least tenfold by chemical treatments for rotresistance; whereas probably most of the bags used prior to 1940 were not so treated.

Of the several factors which might be cited as a cause for the more extensive use of sandbags, the one which appears to be of greatest importance is the development of aircraft as major offensive weapons. By extending the area of combat operations, aircraft have enormously augmented the need for defensive measures in rear areas which formerly were beyond the range of enemy attack. For the construction of bomb shelters and various types of protective walls and barricades in a short time, the sandbag is in many respects ideally suited. Structures of this kind are, however, of a semipermanent nature, and require bags of longer service life than are required for strictly temporary purposes, eg, fortifications in forward combat areas.

In anticipation of this growing demand for a rot-proof sandbag, a materials evaluation program has been carried on at the Laboratories for the last five years. The aim of this program is to find a material which, in addition to being invulnerable to rot, has the strength, drape, resistance to abrasion, snagging, tearing and weather, and the other properties and attributes necessary in a material suitable for sandbags. Under the program, we have examined many different materials, including plastics in the form of films, laminates, textile fabrics and coatings, textiles woven of natural fibers and glass, resin-impregnated paper, modified cellulose, etc. While a number of the materials satisfy the physical requirements, none can be said to be entirely satisfactory. Two other requirements of paramount importance have been largely instrumental in preventing the adoption of a rot-proof bag. These are cost and availability.

Cost, of course, is an important consideration. The price of the present jute burlap sandbag (14-16 cents/bag) tends to become a standard for sandbags of any type. The reason is that the military forces still use large numbers of sandbags for purposes which do not require long-service life. To pay a premium price for durability in bags used for such purposes is, of course, uneconomical. An obvious question is, "Why do so? Why not use the present bag for purposes where it gives adequate service, and use more durable bags where they are needed?" A detailed answer to this question is not simple, but one serious objection to this procedure is that its adoption would require the establishment of stocks of sandbags of various grades, all designed essentially to serve the same purpose, and would introduce the risk of confusion and waste resulting from substitution of one grade for another in filling requisitions. An objective of the Standardization Program of the Armed Services is to simplify the

(concluded on page 579)

Figure 3
A bridge repaired with sand bags at Kongju, Korea—27 January 1951

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CURRENT DEVELOPMENTS IN THE APPLICATION OF DYESTUFFS*

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The author brings his audience up to date in discussing the current trends in the dyeing of cellulosic fibers, wool, Vicara, nylon, Dacron, Orlon, Dynel, Acrilan, and Arnel as well as various blends.

INTRODUCTION

THE textile industry is attaching increasing importance to the selection of dyes to meet end-use requirements. They find it is good business to meet consumer requirements which will develop satisfied customers. New methods and equipment are facilitating attainment of such end-use requirements.

DISCUSSION

CELLULOSIC FIBERS———In the cellulosic field, these trends are characterized by the increasing use of *vat dyestuffs*. In the case of cotton yarn, current developments include increasing application of higher temperatures in the dyeing of cotton yarn in package machines. Through the selection of vat dyes stable at the higher temperatures of 160°-180°F, improved penetration and leveling is obtained which in many cases minimizes the difficult problem of cross-overs.

Naphthols also are finding increasing use on cotton yarn and piecegoods. Popular bright red shades are being produced on cotton knit goods in the piece. For this purpose a substantive naphthol, such as Naphthol AS-SW, is utilized. Success in this method of dyeing depends on keeping the goods in motion all through the process and never dropping the bath during the salt rinsing or the development with the fast color salts.

This trend is also to be noted in the case of rayon (tufted) carpeting. For this use considerable work has been done in selecting the most level-dyeing direct colors of superior fastness to light. In cases where nylon is present, these colors should leave it unstained. Nylon is then brought up to shade with the fast-to-light neutral-dyeing acid colors or Cellitons. In order to obtain the maximum fastness for this end use, current investigation is underway with respect to the application of vat colors to rayon stock or to the application of Algosol colors to piecegoods.

Dyeings on rugs 10 to 12 feet wide have shown to be well penetrated and level from side to side and center with exceptionally good light fastness and stability to washing and cleaning.

Progress has also been reported in improving crock fastness of dark shades on cotton denims or piecegoods in the case of dark shades through the use of *resin coatings*. In addition to their improving crock fastness, abrasion resistance of certain fabrics is said to be improved.

Regarding *spun rayon piecegoods*, it is important to select direct colors which are not affected in fastness to light or change adversely in shade with the current anticrease or permanent finishes, such as urea, melamine resins, or the Avcoset Method. There is increasing use in this field of direct colors, which, when aftertreated, improve light and wash fastness to a very high degree. This aftertreatment is normally applied simultaneously with the resin finish as a part of the finishing operation.

An interesting new machine which offers promise for the dyeing of rayon stock is the *Williams Continuous Fiber Processing Machine*. In the case of rayon, vat and naphthol colors may be applied. (See Figures 1 and 2)

WOOL———Continued progress is noted in the dyeing of wool. In particular, successful continuous dyeing of wool stock on the scouring train is to be noted. This has been particularly applicable to carpet shades, but also offers promise for darker shades. Other developments include the application of higher than conventional temperatures for the dyeing of wool yarn. Satisfactory results are being obtained by dyeing at 220-225°F, with increased production due to the shorter dyeing times as compared to the conventional temperatures.

There is also increasing interest in the application of the neutral-dyeing premetalized wool colors from the standpoint of increasing production and improving the quality of the wool, which may be damaged with excessive time of dyeing in the presence of strong sulfuric acid.

Chlorination of wool is still of interest to reduce the shrinking of the wool and render it nonfelting, thus making wool garments washable.

VICARA———Vicara protein fiber is now being offered in both an unbleached and bleached form, the latter now holding its bleach well upon exposure to light. The addition of this fiber to cotton and rayon fabrics decidedly improves the hand, and it maintains warmth when blended with wool. Vicara can be dyed satisfactorily with all the dyestuffs that are suitable for wool. Acid, Palatine, and chrome dyes are most generally used when dyeing all-Vicara, the methods of application being the same as for wool with the exception of chrome dyes that do not dye well by the chromate method. In general, fastness properties of Vicara are the same as on wool provided the bleaching of unbleached fiber is not involved. Since Vicara is less sensitive to alkali than wool, it can also be dyed more easily with vat or sulfur dyestuffs without damage to the fiber. In the dyeing of Vicara-wool blends, care must be taken in the selection of dyes since many of the common wool colors will not produce good unions.

VICARA-NYLON———Blends of Vicara and nylon are particularly popular at the present time, especially for sweaters, because they so closely resemble straight cashmere in softness of hand. It has not been found possible to prepare a list of dyestuffs that will give good unions under all conditions on Vicara-nylon blends inasmuch as each shade and blend may be a separate problem. There

* Presented before the Mid-West Section at Milwaukee, Wis, on May 5, 1956.

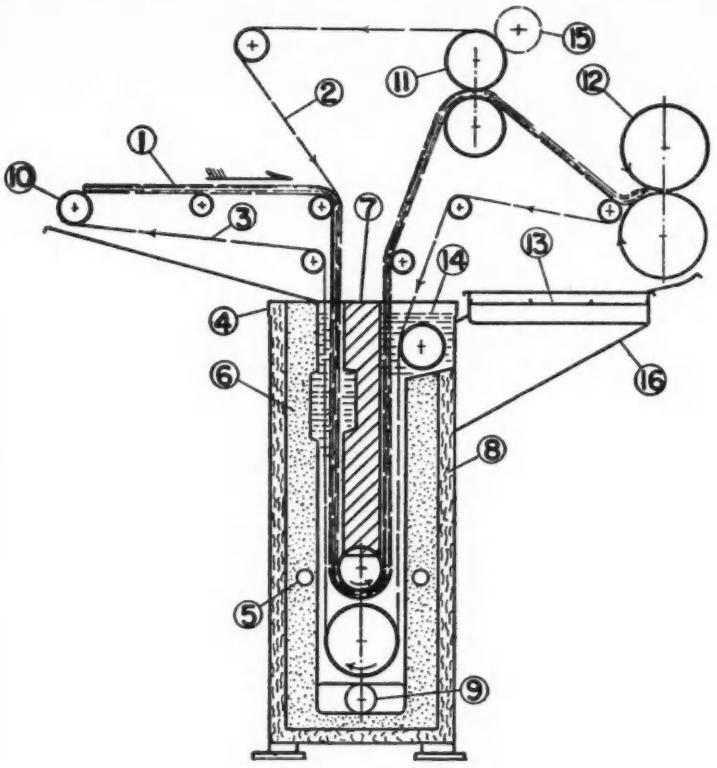

Figure 1
Williams Continuous Fiber Processing Machine

1—Fibers
2—Top mesh belt
3—Lower mesh belt
4—Tank
5—Steam inlet
6—Steam chest
7—Removable baffle
8—Insulation
9—Drain
10—Tightener roll
11—Draw roll nip
12—5-Ton nip
13—Lint screens
14—Liquor level
15—Belt brush
16—Dye return pan

are, however, some very good guides of formulations that have been set up to enable the dyer to arrive at a starting point.

VICARA-RAYON ——— Selected fast-to-light and neutral-dyeing acid dyestuffs produce good unions on Vicara-rayon blends. Dyeing usually is done at 200°F with the assistance of a cationic detergent; exhaustion of the direct dyes is controlled with salt depending on depth of shade.

WOOL-SILK———There is growing interest in the dyeing of wool-silk mixtures. For the dyeing of tone-in-tone unions of wool-silk, selected acid colors are dyed in a neutral solution in the presence of 30% common salt on the weight of the fiber. In many cases it will be found that the silk is heavier than the wool. If sodium sulfate is used in place of common salt, the silk is dyed somewhat weaker, but still distinctly heavier than the wool. Decreasing the amount of common salt or sodium sulfate to 20 or 10% on the weight of the fiber will produce a good tone-in-tone dyeing, inasmuch as the dyestuffs selected for the union dyeing of wool and silk have such strong affinity for silk that they are not readily transferred to the wool in boiling solution even when acetic acid is added to the bath. However, it is possible to fill up the wool by the addition of more dyestuff in the presence of 1 to 3% acetic acid 28% or 3 to 5% of ammonium sulfate. Wool can, of course, also be filled up readily with an acid dye that has more affinity for wool than silk in either neutral or acid solution. In order to obtain a full black, premetalized acid dyestuff is recommended. For this application on a wool-silk mixture, dyeing is carried out with 4% sulfuric acid 66° Bé on the weight of the fiber.

NYLON———The use of nylon continues to grow. Whereas for many end uses disperse acetate colors are found satisfactory, there is continuing interest in the application of faster colors in order to meet particular end-use requirements. For this purpose selected acid and premetalized colors are applied at temperatures up to 250°F, and yield dark shades of improved fastness properties. Addition of surfactant to the dyebath also assists in leveling and the minimizing of barré.

NYLON TRICOT———The Burlington Machine has been used very successfully in the dyeing of nylon tricot. This one-way flow machine offers the following advantages over the conventional beck dyeing of tricot:

1) Increased production (4000 yards or more in one operation).
2) Elimination of costly tacking operation.
3) Elimination of rope creases.
4) Elimination of chafing.

Material to be dyed is delivered very carefully from a McCreary Batcher or from a tenter frame onto the beam which contains a few layers of openly constructed inner wrapping of cotton or Type 81 Orlon acrylic filament, depending upon the dyes being applied. It is important that the material to be dyed extend two or three inches over the perforations of the beam.

CHENEY METHOD———This patent has been purchased by the Du Pont Company. It consists of a treatment with phenol and sodium acetate. Reports are that a definite covering of barré is apparent.

BAN-LON YARN———This is a very interesting new yarn of textured nylon, which offers promise for sweaters and bathing suits. Most of this yarn at present is being dyed in garment form. Prior to dyeing, the garment is laid flat in an autoclave or thermosetting machine and the fabric is heat set. Recommended heat setting consists of a six- to ten-minute treatment in an autoclave at 20 to 30 lbs pressure, that is, a temperature range of 259-265°F. This gives the sweater complete stability against stretching and shrinking, eliminates dye wrinkles, and aids in dyeing affinity for most uniform dyeing. It also improves the texture of the fabric. After heat setting, the sweater may be dyed with acetate, acid, or acid metalized dyes. Of these the acetate dyes show the best dyeing characteristics and in selected cases give

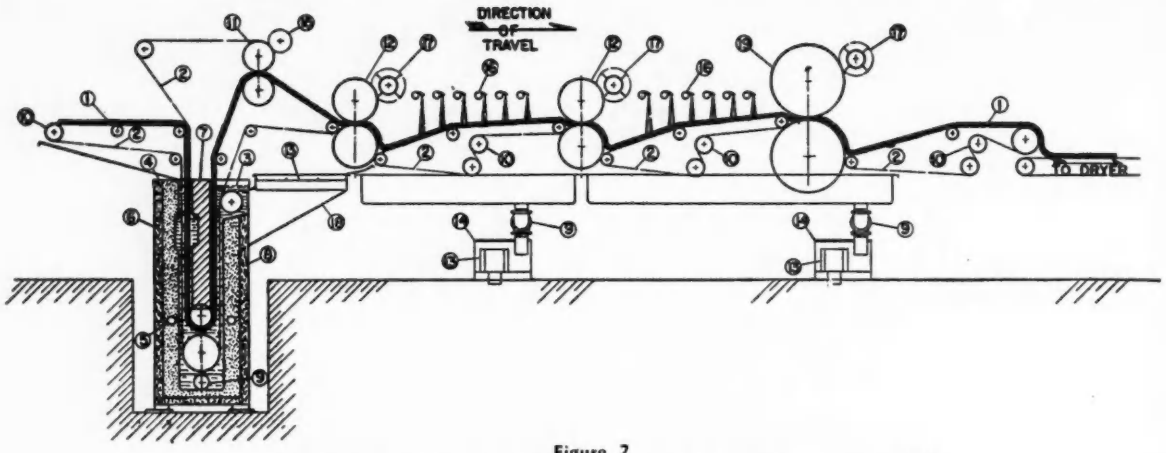

Figure 2
Single unit installation with double washing conveyors (US Pat 2,552,078)

1—Fibers
2—Mesh conveyor belt
3—Liquor level
4—Tank
5—Steam inlet
6—Steam chest
7—Removable baffle
8—Insulation
9—Drain
10—Tightener roll
11—Draw roll nip
12—5-Ton nip
13—Lint screens
14—Lint tank
15—Belt brush
16—Spray pipes
17—Roll wiper
18—Dye return pan
19—15-Ton nip

fastness properties good enough to pass AATCC Wash Test No. 2, which is the minimum standard for Ban-Lon. The acid and acid metalized colors give considerably better wash fastness but have a tendency to show unlevelness in light to medium shades. Dyeing is usually started at 100°F, after which the bath is circulated for ten minutes, and the temperature raised in approximately 30 minutes to 180°F for the acetate dyes and to the boil for the acid dyes. Upon completion of the dyeing the fabric is well rinsed, and usually, in the case of acid dyes, given a light soaping prior to finishing. If the fabric is to be softened and given an antistatic treatment at the same time it is recommended that a cationic-type softener be used. The softener is generally applied by the exhaust method running for twenty to thirty minutes at 120-130°F, usually followed by centrifuging and a tumble drying.

STRETCH NYLON———Considerable progress has been made in the dyeing of stretch nylon, such as Helenca. Of particular value has been the development of yarn dyeing in "muff" form, where the finished grey yarn is skein-wound and the skeins then shrink into crimped and relaxed filaments. These muffs are dyed in this form and then rewound to cones ready for use in knitting. For dyeing, standard two-way flow, as in conventional dyeing, is utilized. Selected acid dyes are normally preferred for the light to medium shades, and aftertreated and chrome colors for medium to heavy shades to insure good fastness. Acid colors are selected on the basis of level dyeing properties (minimum barré) and the response to aftertreatment. A tannic acid, tartar emetic aftertreatment has been found effective in improving wash fastness.

Consideration has also been given to the use of naphthols for bright dark shades in the range of red, navy blue, maroon or brown. These colors tend to cover barré and yield shades of good fastness properties. In this application, the naphthol and base are simultaneously applied at 160°F with the assistance of a dispersing and swelling agent. After dyeing and rinsing, diazotization with nitrous acid is carried out at 160°F. Rinsing, neutralizing and scouring at 180°F with synthetic detergent completes the operation.

TABLE I

Typical carriers for Dacron and recommended concentrations

Carrier	Raw stock, tops or yarn	Closed jig or kettle
methyl salicylate	6% owf*.	——
monochlorobenzene	20% owf	——
p-phenylphenol	4-8% owf	4-8% owf
o-phenylphenol	4-15% owf	4-15% owf
benzoic acid	2% ows**	2% ows
methylphenylcarbitol	2% ows	2% ows
Ketosol Solvent 75	2% ows	2% ows

* owf, on wt of fiber
** ows, on wt of solution

DACRON———Dacron polyester fiber continues to be featured in many new fabrics. It is necessary to dye this fiber with selected disperse dyes at higher temperatures or through the assistance of carriers.

Table I illustrates typical carriers for Dacron and the concentrations recommended.

The value of higher dyeing temperatures is illustrated by Table II, which includes practically all of the newer synthetic fibers as well as Dacron.

A particularly popular blend at the present time is Dacron-cotton 65/35, which meets the demands in the trade for wash and wear fabrics requiring a minimum of ironing. Fast colors are produced on this blend in the form of yarn through the use of disperse acetate dyes for the Dacron with the assistance of the carrier followed by the dyeing of the cotton with vat colors.

In the case of Dacron-cotton piecegoods, the leuco esters of vat colors have been of particular interest for the production of light to medium shades. For the darker shades the Dacron is first dyed with selected disperse (acetate) dyes with the assistance of a carrier followed by the continuous dyeing of the cotton with

TABLE II
Value of higher dyeing temperatures

Fiber	Type	Dyestuff	Temperature (°F)	Results
Arnel	cellulose triacetate	disperse	235-250	shorter dyeing time
Dacron	polyester	disperse	250	excellent color value
Orlon-81	polyacrylonitrile	cationic, basic	250	excellent color value
		vat	250	improved color value
Orlon-42	acrylic	cuprous-ion method (selected acid colors)	230	improved wet fastness
		vat	230	improved color value
Dynel	acrylic	disperse	215	shorter dyeing time
Acrilan	acrylic	vat	240	improved color value
Nylon	polyamide	acid	250	improved penetration and fastness

vat colors. Procedure may also be reversed—the cotton being dyed first with vat colors followed by the dyeing of the Dacron in a fresh bath with selected disperse dyes with the assistance of a carrier.

Considerable yardages of Dacron-wool 55/45 continue to be dyed in the piece. For this purpose selected disperse dyes are utilized which stain wool a minimum. A carrier, such as o-phenylphenol is also utilized. In general, a cross-dyeing procedure is preferred whereby, following the dyeing of the Dacron, material is rinsed and scoured to clean the wool as much as possible following which the wool is brought up to shade with premetalized acid or chrome dyes. Selected blends of this type have also been successfully dyed on the Burlington Machine, which permits processing in the open width.

ORLON 42———Type 42 Orlon acrylic fiber has enjoyed extensive popularity in the knitwear field. Sweater bodies of Orlon 42 have been extensively dyed in a wide range of shades through the use of disperse dyes and selected cationic dyes (basic dyes). Cationic dyes are utilized in particular for their very bright shades. Orlon 42 has also been successfully dyed with these same colors on the package machine at conventional temperatures. Current results would indicate that improved penetration and leveling with a shorter dyeing cycle may be obtained through the use of higher temperatures.

Uniform package machine dyeings on Orlon 42 have been carried out through the use of selected disperse or cationic dyes, adding the dye slowly and gradually raising to 190°F. Run 20 minutes, raise to 220°F. Run 1½ hours, cold running wash till clear. Then soften.

Blends of Orlon-wool may be dyed through the use of selected cationic dyes for the Orlon with acid colors for the wool (selected colors which do not stain Orlon). The use of 4% of 28% acetic acid in the bath keeps the cationic dyes off the wool. Auxiliaries recommended as assistants are a water-soluble polyethylene ether and a cationic agent which prevents mutual precipitation of acid and basic dyestuffs. Such assistants are Emulphor ON or Peregal TW.

DYNEL———An interesting development in the use of Dynel acrylic fiber has been for synthetic fur. This is produced from a blend of Orlon and Dynel. For this use Dynel is normally solution dyed, but it may also be colored with selected disperse dyes. A popular blend in piecegoods has been Dynel-rayon. This is dyed through the use of selected disperse dyes for the Dynel with selected fast-to-light direct colors for the rayon. Inasmuch as this material is frequently permanent pleated, it is important to utilize disperse dyes fast to sublimation and to pleating and also to utilize direct colors which are fast to pleating. Neutral premetalized dyes also offer promise on Dynel for light to medium shades where improved fastness to light is required.

Since blushing occurs in dyeing Dynel at the required temperature of 205°F, it is necessary to reluster after dyeing in order to obtain the true shade. This may be accomplished in the case of 100% Dynel through the use of dry heat not exceeding 240°F. Relustering in the case of blends with rayon may be carried out simultaneously with resin curing at the usual temperature. A minimum of tension is recommended for this operation. Satisfactory results have been obtained on a loop dryer using a temperature of 320°F for six minutes.

ACRILAN ——— Acrilan acrylic fiber knit goods (sweaters, etc) are being successfully dyed with selected cationic and disperse dyes. Cationic or disperse dyes in combination with direct colors are recommended for blends with cotton or rayon. Acid, premetalized acid, neutral premetalized, and chrome dyes are recommended for dyeing blends of Acrilan and wool. In order to obtain good unions, it is necessary to use a cationic assistant which promotes transfer of the wool dye to the Acrilan. Up to 8% sulfuric acid 66° Bé owf is required in order to obtain a satisfactory penetration of the Acrilan. Selected cationic and disperse dyes must be used for the Acrilan in certain bright shades in order to maintain light fastness. The wool in this case may be dyed with neutral dyeing premetalized colors.

ARNEL———Arnel triacetate fiber has much less affinity for disperse dyes than conventional acetate. For this reason, as previously described, higher temperatures of dyeing and the use of accelerants or carriers is recommended. Heat setting is essential. Satisfactory results are being obtained with selected disperse dyes applied at 205°F. Following dyeing and drying, the material is heat set for 30 to 10 seconds at 420 to 430°F. A short scour at 140-160°F may follow this operation in order to obtain maximum wash fastness. Blacks are produced with developed colors. Blends of Arnel with cotton or rayon may be dyed with selected disperse and direct colors. The resistance of Arnel to saponification makes possible the continuous vat dyeing of cotton or rayon to leave Arnel white.

SUMMARY

It is reported that new synthetic fibers will continue to be introduced. Developments by one or two of the large chemical manufacturers are now in progress in pilot plants, and they no doubt will soon be ready for the market. It will continue to be necessary to carefully screen available classes of dyes and to extend their number through dye research for the newer and older fibers in an effort to make the dyer's position a little easier.

New developments, particularly in the field of continuous dyeing, are to be expected. Special methods will undoubtedly continue to be required in many cases. Looking at the newer synthetic fibers, we can say with confidence and encouragement that industry has unquestionably done a magnificent job in obtaining and meeting customer end-use requirements. All this has resulted in raising our standard of living.

Rhode Island Section———

"WASH AND WEAR" FABRICS*

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The "wash and wear" properties of fabrics and the methods for evaluation are discussed. Some confusion has resulted because of misleading claims. The authors propose that the definition of a "wash and wear" fabric be as follows:

"'Wash and wear' fabrics are those which can be washed by any normal home washing procedure and will dry sufficiently smooth of wrinkles to allow them to be worn or used without ironing or pressing."

A subjective method of evaluation is shown to have good correlation with crease recovery values. For maximum "wash and wear" characteristics, fabrics should have 240° crease recovery, as measured by the Monsanto Tester, after five home launderings. Crease recovery alone cannot be relied upon to give adequate indications of "wash and wear", and fabrics should be checked by a washing procedure.

INTRODUCTION

No subject in the textile industry has created more interest in recent times than the introduction of "wash and wear" cotton fabrics. We in the cotton finishing industry are indebted to the synthetic fiber manufacturers, for with the introduction of the new synthetic fabrics they have stimulated the development of cotton fabrics with improved properties. Truly modern chemistry, through the development of synthetic fibers and the improvement of the natural fibers, has created fabrics which have superior properties to those existing fifteen years ago. It has been said that, if cotton fibers did not exist and a development took place in one of the large research laboratories that resulted in the production of a cotton fiber, then cotton would be hailed as the most miraculous fiber.

Recently we heard the story of a discussion between the research director of a synthetic fiber company and one of his chemists. They were looking over samples of experimental fabrics. One sample they both agreed was outstanding and should be developed further. Their comments were that it looked and felt like a cotton fabric.

It has been known for some time that cotton fabrics with a crease-resistant finish have looked better after continued wearing. Many of these fabrics have also been less wrinkled after washing and drying so that it has been easier for the housewife to press garments made from crease-resistant fabrics. It was natural then to study the factors involved in the appearance of fabrics after washing and drying and, if possible, to make improvements. This has been done and many fabrics are now available that have the property of drying smooth after washing.

As in any new development, there is much confusion on the part of the finishers and consumers as to what constitutes a "wash and wear" fabric. At the present time it depends to a great extent upon personal interpretation and evaluation. Each individual naturally interprets the meaning of "wash and wear" for the specific fabric and the specific end-use in which he is particularly interested.

The AATCC, recognizing that such confusion is detrimental to the textile industry, has formed a committee to develop a test method for evaluating "wash and wear" fabrics. The AATCC should be commended for its prompt action taken in forming this committee. It is hoped that this committee will work quickly, for the development of a standard test for evaluating "wash and wear" fabrics would certainly eliminate much of the confusion which now exists. We also feel that discussion among the members of the textile industry will be beneficial in clarifying the issue of "wash and wear."

DISCUSSION

If we stop to examine the title of "wash and wear" we realize that it is neither correct nor appropriate since we may desire to impart the same performance characteristics to fabrics such as curtains, bedspreads, or draperies, which are actually never worn. A search for a more appropriate title proved fruitless, however, and therefore we have still continued the title of "wash and wear" until a more descriptive connotation can be found.

Several definitions have been proposed for "wash and wear" fabrics, but from a cotton finisher's point of view we feel that it should be defined as follows:

'Wash and wear' fabrics are those which can be washed by any normal home washing procedure and will dry sufficiently smooth of wrinkles to allow them to be worn or used without ironing or pressing.

Many fabrics on the market fall into this classification. Others that we have tested fall far short of the definition. Wording of the claims is often misleading. From a mediocre crease-resistant cotton fabric to an excellent "wash and wear" fabric there is a considerable difference in appearance after performing a washing and drying test. To be sure, a comparison with an untreated fabric usually shows a difference in favor of the crease-resistant fabric. We feel that there should be a distinction between a crease-resistant finish and a "wash and wear" finish. Our company produces a crease-resistant finish known as Fresh Tex and a "wash and wear" finish known as Dri-Smooth. We have carried out many tests on these finishes and in most instances the crease-resistant finish would require pressing after washing and drying while the "wash and wear" finish is satisfactory for wearing without pressing. Samples of the both fabrics sent to other laboratories for testing are reported as passing a "little or no ironing" washing and drying test.

Unfortunately for cotton finishers, or possibly fortunately the housewife feels cotton fabrics are cotton fabrics and no matter whether they have a "wash and wear" finish or not they will be washed in a normal manner—in a washing machine. To be practical then a cotton "wash and wear" finish must be able to stand this treatment. At the same time, a housewife will often handle synthetic fabrics carefully and in most cases wash by hand.

*Presented before the Rhode Island Section on March 22, 1956

In developing our "wash and wear" finish, we examined the various washing procedures for cotton fabrics which might be used in the home. We found that the following four procedures represent those normally used by the housewife:

1) Hand wash in lukewarm water at approximately 100° F; wring by hand to remove excess moisture and air dry.

2) Wash in an agitator type washer at 140-160° F; run through wringer and dry.

3) Wash in an automatic washer either tumble or agitator type at 140-160° F; air dry.

4) Wash in an automatic washer either tumble or agitator type at 140-160° F; dry in an automatic tumble dryer.

Numerous methods have been proposed to simulate these procedures for the evaluation of "wash and wear" finishes. Each laboratory and each producer of "wash and wear" fabrics has a different procedure for testing and evaluating. The one feature common to all of these methods is that they depend upon personal evaluation and interpretation of a washed sample. So far as we are aware no single measurement has yet been devised with which it is possible to predict unfailingly whether a fabric will be satisfactory for "wash and wear."

We feel that until such time as more simple methods of evaluating "wash and wear" finishes are developed, the best procedure to use is that followed by the housewife in washing and drying. Our method consists of preparing a skirt from two yards of the material to be tested and then washing through a complete cycle in an automatic washer similar to that used in the home. None of the cycles are omitted and the skirts go completely through the spin cycle as they normally would. The wash temperature is maintained at that normally used in home washers, ie, 150° F. After the spin cycle the skirts are removed, shaken to open the skirt and hung by the waistband. After drying, the skirts are evaluated by observing the appearance, judging whether the skirt would be suitable for wearing without ironing or pressing. We grade our skirts using the following system:

5—Excellent—No apparent wrinkles; can be worn without ironing.

4—Very Good—Some very slight wrinkles; can be worn without ironing.

3—Good —Some wrinkles apparent but can normally be worn without ironing.

2—Fair —Numerous wrinkles but better in appearance than a regular crease-resistant finish; requires ironing.

1—Poor —Considerable number of wrinkles; similar to a regular crease - resistant finish; requires ironing.

On the basis of the above ratings we pass as satisfactory only those fabrics rated higher than 3. These are the fabrics which we feel can be worn without ironing.

In our testing we have found that the fabrics which are satisfactory in the above test are generally satisfactory by any washing method, provided they are not excessively squeezed by hand or run through a machine wringer. Samples which are not satisfactory by the above tests may pass other less severe tests but we feel that these fabrics would not be suitable and would lead to consumer dissatisfaction.

To determine how consistent our subjective evaluation was and also to determine if any correlation existed between the appearance and the crease recovery, we examined the results obtained from our quality control tests on plant production of 80/80 print cloth. These results are listed in Table I, which shows number of tests performed, the rating of the skirts by the above method, the maximum, minimum, and average results on both the original sample and after five home laundries.

Examination of this data discloses that the subjective evaluation of the skirt appearance after washing and drying agrees with the average crease recovery values both on the original and after five home laundries. We do not intend to imply that crease recovery alone can be used to judge "wash and wear" characteristics, but only to point out that subjective evaluation can and does correlate well with other measurable properties. It is possible to draw some conclusions from this data and make some general observations of the degree of crease recovery required for good "wash and wear" characteristics. For maximum results the fabrics should have crease recovery values of 275° on the original and 240° after five home laundries. The minimum crease recovery values for acceptable results would be 240° on the original and 220° after five home laundries. Again we want to emphasize that at the present we still cannot rely completely upon crease recovery values alone, and the final judgment as to whether a fabric has adequate "wash and wear" characteristics should be based upon the appearance of a washed sample.

TABLE I

Correlation between subjective evaluation and crease recovery

No. of Tests	Skirt Rating	Original Max	Original Min	Original Avg	Five Home Laundries Max	Five Home Laundries Min	Five Home Laundries Avg
44	5	299	239	275	267	221	239
22	4	298	243	269	257	220	233
10	3	285	242	260	253	223	231

If we disregard, for the moment, other improvements produced by the finish, the essential characteristics which distinguish a "wash and wear" fabric are the improved resistance to wet deformation or wet creasing and also the ability to recover from such deformations during the drying cycle. Which of these factors is the more important is not known at the present time. There are, of course, many other factors which influence "wash and wear" characteristics. The most important of these are, 1) type of fiber; 2) fabric construction; 3) fabric coloration either by printing or dyeing; 4) type of resin; 5) finish formulation and application.

TYPE OF FIBER——The chemical nature of the fiber will have a direct influence upon "wash and wear" properties. Generally, it would be expected those fibers having low water absorption, and high resilience, particularly when wet, will produce better results; while fibers having high water absorption and low resilience when wet will produce poorer results. The synthetic fibers usually meet the first requirements without further treatment, but the chemical and physical properties of fibers such as cotton can be modified to produce good results.

Some laboratory experiments were conducted to determine the amount of water retained by various types of fibers. Fabrics composed of the different fibers with and without resin finishes were given an automatic home wash and then moisture determinations were made after the spin cycle. The results are shown in Table II with increasing amount of water retained.

This indicates that the water retention of the cotton fabrics can be

TABLE II

Amount of water retained by various fabrics after spin cycle

Fabric		% Water Retained
Filament nylon	—no finish	—29.5
65% Dacron; 35% cotton	—resin finish	—34.0
80/80 cotton	—resin finish	—42.0
80/80 cotton	—"wash and wear" finish	—42.5
65% Dacron; 35% cotton	—no finish	—45.0
80/80 cotton	—no finish	—61.0

reduced by resin application to more closely approach that of the synthetic fibers. It will be noted that the water retention is still 8-12% higher than that of the synthetics, thus the resin-treated cotton fabrics should be more comfortable to wear.

Measurements were also made to determine the resiliency of those fabrics by measuring the dry and wet crease recovery using the Monsanto method. The wet measurements were made on samples which had been wet out for five minutes at 150° F in a solution of 0.1% of a synthetic detergent and blotted between layers of cloth. The results are shown in Table III with decreasing crease recovery values.

From these data it can be seen that the nylon sample has good resistance to both dry and wet deformation. The "wash and wear" finish has good dry recovery but somewhat lower wet recovery. The Dacron-cotton fabrics, both resin finished and not finished, have approximately the same recovery dry, but the wet recovery is better on the resin-treated sample, as would be expected. Both of these are below that of the "wash and wear" cotton. The crease-resistant fabric is lower than all of the fabrics on the dry recovery, and on the wet crease recovery, is not appreciably greater than an untreated fabric. It will be noted the untreated sample has higher wet than dry crease recovery.

FABRIC CONSTRUCTION——Improvement in fabric properties can be achieved by resin finishing, but if the base fabric is not suitable, then no amount of resin finishing can produce a "wash and wear" fabric. The requirements of fabric construction for "wash and wear" cotton fabrics were adequately discussed in a paper by Lippert (*1*).

TABLE III

Resiliency of various fabrics (Monsanto Method)

Fabric		Crease Recovery Dry	Wet
Filament nylon	—no finish	291	289
80/80 cotton	—"wash and wear"	293	258
65% Dacron; 35% cotton	—resin finish	258	245
65% Dacron; 35% cotton	—no finish	255	226
80/80 cotton	—resin finish	238	209
80/80 cotton	—no finish	165	176

Fabrics which permit the utmost in flexibility by allowing the yarns freedom of movement relative to one another promote "wash and wear" characteristics. The more tightly woven constructions with reduced flexibility generally give poorer results. Coarser yarns also promote better results while the finer yarns give somewhat poorer results.

It is not always possible to predict the suitability of a particular weave based on the above observations. Therefore it is necessary to actually finish a fabric to determine if it will be satisfactory.

COLORATION THROUGH DYEING OR PRINTING——Theoretically, dyeing or printing should have relatively little effect upon the physical properties provided the types of colors used do not interfere with the resin application. Actually, it has been found that color and the distribution of color has an important psychological effect upon the appearance after washing and drying. Full-covered patterns with many small broken areas effectively camouflage numerous small ripples, thus giving the washed fabric a much smoother appearance. Of course, a full-covered print without proper finishing will still not give satisfactory results. Although "wash and wear" results can be obtained on white and plain-dyed fabrics, these are much more difficult to process satisfactorily. Colors or fabrics which have greater amounts of reflective surfaces also give poorer results.

TYPES OF RESINS——"Wash and wear" characteristics are usually obtained on synthetic fabrics without the use of resin finishes. In some of the newer blends of synthetics with cotton, resin application improves "wash and wear" characteristics.

With cottons, resin application is essential to obtain the desired performance characteristics. In an excellent paper by Williams (*2*) on the types of resins which can be used for "wash and wear" finishes, it was shown that the reactant-type resins are most suitable, the melamine resins are slightly less effective, and the urea-formaldehyde types are less satisfactory for "wash and wear" finishes on cotton fabrics. Our experience confirms these results in regard to the reactant and melamine types, but we have done no appreciable amount of work with the urea types.

TABLE IV

Effect of resin type on physical properties

	Tensile W	Tensile F	Tear W	Tear F	Crease recovery Orig	Crease recovery 5HL	Wash and wear rating
Starch	57	42	1328	853	192	180	Unsatisfactory
Melamine resin	58	37	1114	480	231	215	1
Fiber-reactant resin	49	28	1056	458	275	257	5

FINISH FORMULATION AND APPLICATION——To obtain "wash and wear" characteristics on cotton fabrics we need to decrease the water absorption and increase the fiber resilience to dry and wet deformation without impairing the flexibility or stiffness of the fabric. These objectives have been accomplished, to a certain extent, by the crease-resistant finishes which have been produced for some time. It was obvious in our early tests on the crease-resistant fabrics then available that some of these properties were not improved sufficiently and further modification was necessary to produce satisfactory "wash and wear" characteristics.

Since our main objective is to obtain increased fiber resilience without affecting fabric flexibility, it was assumed that a fiber-reactant resin would be most suitable. From practical experience it was known that this type of resin would produce the softest hand. Theoretically, a fiber-reactant resin forms only cross-linkages with the cellulose molecule and does not react with itself to form resinous materials which could be deposited in and between the fibers and yarns to increase fabric stiffness and thereby decrease fabric flexibility.

To confirm this assumption, trials were made using a melamine resin and fiber-reactant resin. Approximately 5% resin solids of each type were applied to an 80 80 printed fabric. A lubricant was included in each formulation to maintain satisfactory tearing strength and other physical properties. The same fabric was also given a starch finish to give comparative results of an untreated fabric. Physical tests were performed on these samples. Results are shown in Table IV.

(concluded on page P560)

Mid-West Section —

INSTRUMENTATION
An Integral Part of Dyeing and Finishing*

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Reasoning from the many instances in which instruments have been shown to aid in dyeing and finishing work, and particularly from the growing list of process applications which cannot be successfully done without instruments, it can surely be proved that instrumentation has become an integral part of the operation. Instrumentation is making the operator's work easier, more pleasant, and safer. It is a capital investment which offers quicker and larger returns than most equipment investments. Finally, instrumentation is now necessary as never before because it is a major contributor to the establishment of competitive quality and economy

INTRODUCTION

INDUSTRIAL instrumentation has become a vital factor in dyeing and finishing work, to the point where it would be difficult, indeed, to launch a new textile machine or develop a new process that is not instrument-equipped. In this respect, the industry is approaching the status of the oil refiner who cannot run his process without instruments. More and more textile processes are becoming totally dependent on measurement and control. Therefore, it is essential for the chemist and the colorist to keep informed on new instruments and applications that may well make the difference between success or failure of a process development.

Underscoring this progress in textile instrumentation is the paper given by our 1952 Olney Medal winner, Werner von Bergen, director of research for Forstmann Woolen Company (*1*). Addressing his remarks to the young textile chemist, Mr von Bergen strongly emphasized that one of the requirements for success in the field is that the chemist should be able to control carefully the three variables: time, temperature, and concentration. While Mr von Bergen did not go into a discussion of the various types of measuring and controlling devices, it is interesting to note that each of the measurements singled out as important to the chemist presupposes instrumentation.

Instruments available to the chemist for time, temperature and concentration measurements are of two basic types: laboratory and industrial. In general, the laboratory type, such as a glass thermometer, is not suitable for automatic control. However, the industrial type can nearly always be obtained with automatic control. This discussion will deal only with industrial-type instruments.

Industrial time and temperature instruments have been available for many years, singly and in combination. However, percent concentration is a different matter. No continuous titrator has yet been developed for this measurement, although instruments calibrated directly in percent concentration are being used for continuous measurement and control in specific applications, which will be described later.

It should also be mentioned at this point that time, temperature and concentration are only three of the measurements required in dyeing and finishing textiles. Others include pressure, flow, conductivity, liquid level, density, humidity, pH, redox, moisture and viscosity. How these measurements, and the instruments which make them possible, are integrated with the dyeing and finishing operations will be developed in this discourse.

For proper evaluation of textile instrumentation, it is interesting to consider today's situation in contrast to a few years ago. To a certain extent, there was always the feeling among chemists and colorists that instruments were an integral part of processing, in spite of the fact that early experience with instrument durability and performance left much to be desired. The operators, in particular, were dubious about the value of instruments. Some would not use them; others went so far as to make it very difficult to keep them operating.

Two courses of development changed this situation. Instruments today are more rugged and reliable than they were several years ago. They are constructed to give longer service and to give better, more accurate performance. While instruments were being developed, so too were textile processes and the methods of applying instrumentation. Today's textile-finish specifications often set up tolerances that are too close to be met by manual control. The instrument, while it needs the man to direct it, does a better job of maintaining standards of quality and uniformity than man can do alone.

Far from resenting the help of instruments, operators now welcome such assistance. In a good many cases, this is understandable when the danger of handling concentrated alkalis or acids, the drudgery of operating a full decating machine on a 7-minute cycle, the hazard of lifting heavy rolls of cloth from a winder, the difficulty in controlling the heating and cooling of a piece-dye kettle in which some of the new fibers are being dyed, the health menace involved in the make-up of hypochlorite bleach, or the unpleasantness in the make-up of urea formaldehyde are considered.

It is in the development of instruments for specific applications that the chemist and the colorist have made outstanding contributions. Quite often they will initiate a development program in cooperation with the instrument manufacturer, stemming from a recognized need for better control.

Such projects are often difficult and time consuming, sometimes requiring up to two years to complete. In the light of such painstaking research, it is astonishing to many that the proven development is not immediately accepted throughout the industry. However, it is almost axiomatic that there is just as much educational work to be done after the development as there is time spent on working out the development details, despite the fact that the instrumentation has been tried and proven and there is no gamble left.

*Presented before the Mid-West Section at the Bismarck Hotel, Chicago, Ill., on February 11, 1956.

DISCOURSE

REMOTE VALVE CONTROL——— One of the simplest ways in which dryers and finishers are integrating instrumentation with process operations is the application of a remote control valve system, making remote control of liquid feed to continuous scouring, bleaching and dyeing processes a "finger-tip" adjustment.

The system consists of a small control panel with connections to a three-way solenoid pilot valve, which operates a pneumatic control valve to admit the chemical or water to the process. The solenoid pilot also synchronizes valve position with the starting and stopping of the process.

Mounted on the control panel are an air-pressure regulator, a gauge, and a three-position air switch with three settings: "Automatic-Closed-Manual." The gauge is marked in pounds of pressure being supplied to the valve motor. By watching this gauge and turning the regulator knob, the operator can position the valve to its proper opening for automatic or manual operation.

Aside from the obvious advantage of such a system in saving operators' time and effort in manually tending the various feed valves, direct and substantial savings in process fluids are realized. One of the more dramatic applications was at a Southern bleachery where remote valve control was applied to a dye range and proved so successful that similar units were installed throughout the mill. By automatically closing the water valves when processes were not running, this equipment was responsible for an incredible saving of three million gallons per month.

This does not mean that the matter of lightening operators' chores is not an important one. It calls to mind the now-famous law suit of a brewery worker who sued his employers for $25,000, claiming that he had developed a bad case of arthritis from turning hand valves all day long for twenty-five years. He won the case.

Even European mills are interested in the remote valve control method, which is significant in that textile producers on the Continent are mainly interested in instruments that will improve the quality of their product or reduce operating expenses.

DECATING———Simplicity is also the main characteristic of the instruments used in the full decating, or steaming of open-width cloth. However, unlike the remote valve application which involves only the single measurement of air pressure to the valve, decating requires two measurements: pressure and time. Despite the fact that only two simple instruments are necessary, the complete instrumentation for this batch process is rather complicated.

In decating, a roll of cloth on a perforated mandril is treated by steam in a closed retort to set the nap, improve the luster and give a firmer hand. Briefly, a complete decating cycle involves the creation of a vacuum in the retort, after which steam is passed through the cloth from the outside and then from the inside. The steam pressures and treatment times required, depend on what finish or set is desired.

Nearly two years were required to perfect the instrumentation for this process, with more than one mill cooperating. The difficulties stemmed from the necessity of sequencing nine separate control valves and providing the extreme flexibility which the finishers demand.

Before the system was developed, approximately eleven years ago, decating was a completely manual process. The operator had to read a number of pressure gauges and adjust his timers and hand valves many times during the seven-minute cycle. Today it would be difficult to find a decating machine operated in that manner. With a control system, the operator simply fills the machine, pushes a button and, when the horn sounds, removes the cloth. The operator can devote his entire attention to setting up the steaming cycle and attending to machine-loading procedure, knowing that the control system will carry out the treatment with greater precision than is humanly possible.

CONDUCTIVITY———A more recent development is the integration of electrochemical measurement in dyeing and finishing. Typical is electrical conductivity, which was first applied to a wet process textile application more than twenty years ago. Although the application was a practical one, the instrument used was not too dependable.

Today's conductivity recorders and controllers are far advanced over the earlier models, performing every bit as reliably as a temperature instrument. Then too, a great deal more is known about conductivity-measurement techniques, such as the fact that a temperature bulb used in combination with a conductivity sensing cell permits a calibration in percent concentration of clean chemical and water.

As Mr von Bergen pointed out (*1*), it is necessary to be able to control chemical concentrations. The textile chemist can and does, by using conductivity instrumentation in carbonizing, causticizing and souring-bath applications, to name only a few. Furthermore, this control is continuous and it is automatic, with only an occasional check to verify it.

As to accuracy of the concentration reading, most of the instrument chart ranges run from 0 to 3 or 0 to 5 percent concentration. Since the chart can easily be read to 1 percent of the full range, concentration can be read with a high degree of accuracy, perhaps closer than normal titration. Calibration checks are easily made by dipping the measuring cell into a sample of known percent acid and observing the chart record. The question might well be asked, "What effect do the impurities which normally enter the bath have on measurement?" Actually, the effect is negligible; so little that no adjustment is generally needed even after a week of operation.

The measurement and control of conductivity has also been successfully integrated with batch process work, providing the basis for complete acid dilution control systems that serve the entire mill. Acid is purchased in bulk at considerable savings and is safely handled, diluted, and distributed to the various process points under completely automatic control.

DENSITY———Just as conductivity control has outmoded the titration in acid bath applications, so has density control taken on some of the duties of the hydrometer in mercerizing saturators. The hydrometer, of course, gives a measurement of specific gravity of caustic soda, but this measurement has to be calibrated against temperature and occasionally adjusted after titration to take into account the amount of impurities built up in the saturator.

The density measurement on which automatic mercerizing bath control is based is exactly the same as that made by the hydrometer. In fact, the hydrometer is used to check the density calibration of the instrument. Measurement is made by bubble tubes immersed in the saturator. One of these tubes also serves as a level measurement.

By using two instruments in one, we can control both liquid level and density. The caustic bath is maintained at a certain strength or degrees Twaddell by the automatic addition of strong commercial caustic as needed—usu-

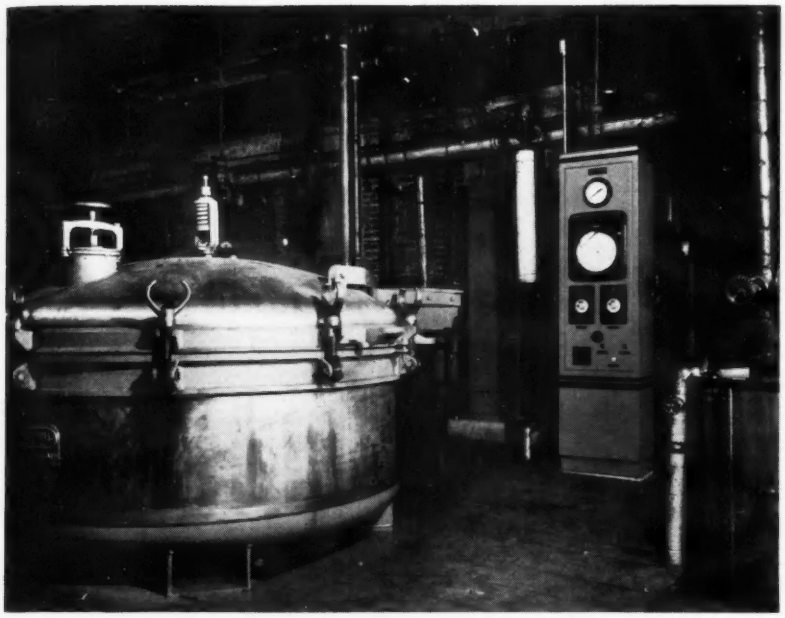

Figure 1
Modern instrument control cabinet on package-dyeing machine

ally a 50 percent solution. Saturator level is automatically maintained by the addition of water or weak caustic.

The system works equally well with wet or dry cloth. There will, however, be some overflow from the bath unless wet cloth is partially dried out by a set of dry cans prior to entering the mercerizer. The level control will keep the water valve closed, but water is carried in by the cloth, diluting the bath so that the density control admits strong caustic solution to maintain correct strength.

Ideally, the dry cans will remove just enough moisture so that the strong caustic mixing with water introduced by the cloth will produce a solution of exactly the right strength.

Whether cloth is run wet or dry, there is a tremendous reduction in the use of caustic where automatic control is applied. Mills have reported that these savings alone have equalled the cost of the instrument in a single year of operation. A secondary benefit is the reduced loads on the evaporators resulting from more careful control. Still more important is the increased uniformity of mercerizing which in turn permits uniform dyeing.

DYEING———The role of temperature instruments in dyeing cannot be over-emphasized. Not only have they been integrated in the dyehouse, but they are looked upon as essential quality safeguards by manager, supervisor and operator alike.

It is small wonder, then, that there is a variety of instrument types in use, ranging from a glass dip thermometer to a complete time schedule unit, such as the CycleLog Controller for batch dyeing operations shown in Figure 1.

The story of the CycleLog Temperature Recorder-Controller is an interesting illustration of cooperation between instrument manufacturer and mill. Designed specifically for textile dyeing, it took a long time to develop. Credit belongs to the mills and dye men whose suggestions, tests and specifications helped to bring the industry one of its most useful instruments.

Today's CycleLog instrument offers the dyehouse a choice of electronic, pneumatic or mechanical measurement, depending on the requirements to be met. Control, however, is mainly pneumatic with the instrument operating steam and water control valves.

There are four basic steps in the batch dyeing process and each is carried out automatically by the CycleLog Instrument. First, the dyebath is heated to around 100 or 110°F and levelled off at that temperature before color is added. It is then brought to dyeing temperature and held there. If a new color is being run, there may then be an "add" of color for shade matching. Finally, if synthetic fabrics or fibers are being dyed, the bath is cooled back gradually before dumping. This prevents the cold water shock that could crease the product and permits the floating off of waste materials by overflow.

It takes an operator only a few seconds to set the instrument so that each of these four steps will be carried out on schedule. There are four control-setting knobs on the outside of the instrument case. At the top is the holding period adjustment marked in hours and minutes. Next to it, the rate of rise knob for °F/min. When the bath is being cooled, the rate of rise becomes the rate of fall. The other two knobs set the final dyeing temperature and the temperature at which the controlled rate of rise will start.

Of course, temperature and time are not the only measurements that are integrated into the dyeing process. Flow and pressure control for high-temperature dyeing in beam, package, cloth and raw-stock dyeing machines is also a necessity. A typical example of such a system is shown in Figure 2. In this connection, the development of elbow-tap dye liquor flow measurement is a noteworthy accomplishment. While work is still going on to perfect it still further, the measurement as it stands today is a vast improvement over earlier methods because it permits the dyer to follow the dye liquor flow formulas recommended by the dyestuff manufacturers in gallons per minute per pound of yarn being dyed.

Actually, the idea of measuring flow by tapping a pipe elbow is not new. It has been used in other industries for many years, but until the advent of the d/p cell (differential pressure) transmitter, it was not practical for the dye liquor application. This small instrument, made of stainless steel, displaces only a few cubic centimeters of dye liquor for a full-scale change in flow rate. Connected to the elbow taps, it transmits the differential pressure measurement as a pneumatic signal as the basis for flow measurement and automatic control.

With control of dye-liquor flow, the dyer can be sure of obtaining the correct amount during the entire cycle. By avoiding excess flows, he prevents packing or channeling on raw stock, "blown" beams, cross-overs on packages, and creases or wrinkle marks on cloth. Undoubtedly the greatest single advantage is that a cycle can be repeated precisely.

In addition to temperature, pressure and flow, oxidation-reduction potential, or redox, has earned its place in dyehouse instrumentation. The use of redox for vat colors on continuous dye ranges and the water-phase type of reduction was publicized throughout the world by General Dyestuff Company and has met with astounding success. Another important application for redox has been

in the manufacture of sodium and calcium hypochlorite. This was introduced by Olin-Mathieson Chemical Corporation. In the experiment stage is a third use, redox measurement as an indication of hydrogen-peroxide bleach strength.

BLEACHING —— Developments in bleaching instrumentation have kept pace with changes in bleaching methods. Kier bleaching, with its temperature instruments, has given way to the continuous bleaching process which needs and uses the help of many different instruments.

One recent example of instrument integration in bleaching work makes use of the control station idea with related instruments grouped together in cabinets that are strategically located at various process points. A typical station is shown in Figure 3. At the top of each cabinet, lighted by fluorescent tubes, are colored graphic symbols which provide a diagram of the machinery, the valves, the various flow lines and the instruments so that each operator can understand the process and the instruments' functions at a glance.

Carrying out the sectional control plan, each cabinet contains all the controls and electrical accessories for a particular process section. For instance, there are six groups of these cabinets in the finishing room, each placed near the equipment which it controls: desize section, acid section, mercerize section, caustic section, peroxide section, and dryer section. Mounted on the cabinets are remote valve control systems, and instruments to record and control conductivity, flow, liquid level, density, temperature, pressure speed and moisture. If one section of the range stops, the flow of water and chemicals stops automatically. With no hand valves to work, the operators can devote their entire attention to running the machine.

MISCELLANEOUS —— No account of finishing operations and their instruments would be even partially complete without mention of some of the more important so-called miscellaneous applications.

Pneumatic loading falls in this class. Squeeze-roll nip pressures are applied and accurately regulated with the aid of a pair of diaphragm air motors, a pressure regulator, a pressure indicator and an air switch. All the squeeze rolls used in the cabinet-controlled bleaching range described previously are equipped with this type of loading. It has been found less expensive than other methods and, since the only friction in the system is between the roll bearings and their guides, it is far more precise.

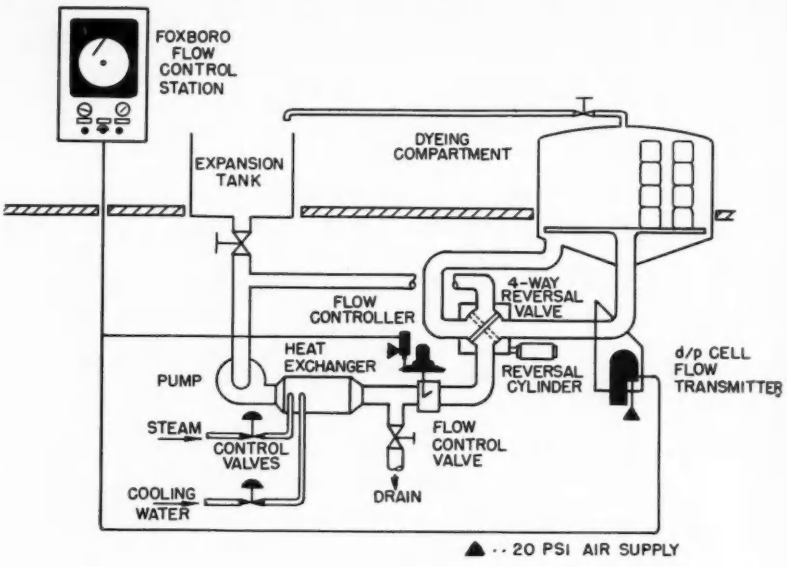

Figure 2
Foxboro flow control system for pressure dyeing machine using d/p cell transmitter and Model 59 Controller

Temperature measurement of cylindrical surfaces should also be mentioned, inasmuch as there is considerable need for it in calender and dryer work and curing or heat-setting rolls. For this measurement an electronic measuring device is used with a temperature-sensing element that rides

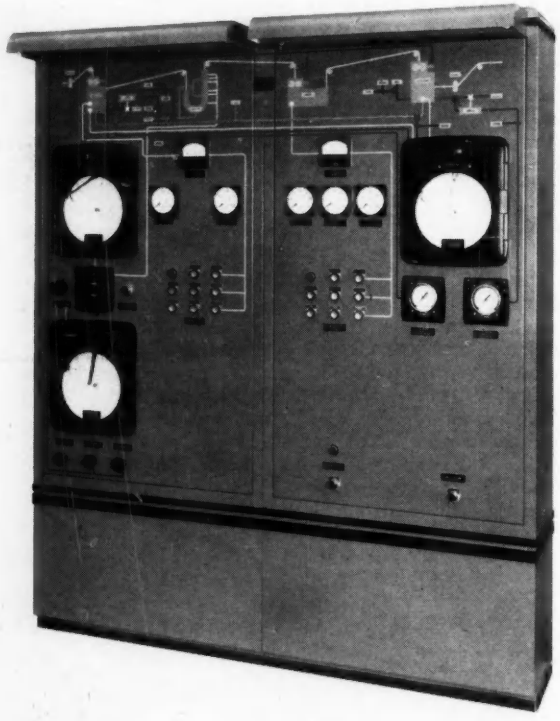

Figure 3
New type control cabinet for peroxide and final wash section of rope range continuous bleaching system

the surface of the roll, responding continuously to temperature variations.

So far there is no universal moisture measuring device such as would be needed to control the moisture of cloth leaving the drying section of a bleach range. Control, of course, will be no problem, once a reliable means of measurement is found, but development work has been going on for the past 15 years without turning up a practical solution. In the cabinet-controlled bleach range described earlier, the moisture problem fortunately is easy, because only a few different fabric weights are involved. Therefore, it is possible to install a resistance - type moisture - measuring head, electrically connected to a recorder-controller. Acting on the moisture measurement, the instrument controls the steam pressure to the dry cans for uniform drying.

Still another measurement is viscosity, rather new in the textile field. Its widest use at present is in the application of sizings and coatings for synthetics.

LITERATURE CITED

(1) von Bergen, W, "The Textile Chemist and His Keys", *Am Dyestuff Reptr* 41, No. 26, P870-3 (Dec 22, 1952).

Papers Future

Manuscripts of the following papers, all of which have been presented before local sections of AATCC, have been submitted to date to the publishers of American Dyestuff Reporter. Subject to the approval of the AATCC Publications Committee, all will appear in the Proceedings in future issues.

Authors and Section Officials are requested to inspect this list, and notify the publishers if there are any omissions.

"Aesthetic Standards in Textile Print Designs"—D D and Leslie Tillett, House of T Fabrics

"Wash and Wear Finishes on Cotton Fabrics"—Hector C Borghetty, Rohm & Haas Co

"New Developments in Peroxide Bleaching"— J L Moore and T E Bell, Electrochemicals Dept, E I du Pont de Nemours & Co, Inc

"Silicones in the Textile Industry"—Alton A Cook, Arkansas Co, Inc

"Hilbulk Acrilin"— S Jack Davis, The Chemstrand Corp

AATCC Calendar

COUNCIL
Sept 12 (New York, N Y); Nov 16; Jan 18, 1957

NATIONAL CONVENTIONS
Sept 13-15, 1956 (Waldorf-Astoria, New York) (as part of the Perkin Centennial, Sept 10-15); Nov 14-16, 1957 (Hotel Statler, Boston); 1958 (Hotel Conrad Hilton, Chicago); 1959 (Sheraton Park and Shoreham Hotels, Washington, D C)

MID-WEST SECTION
October 27, February 16 (Hotel Bismarck, Chicago, Ill)

NORTHERN NEW ENGLAND SECTION
Sept 28 (Annual Outing—Wachusett Country Club, West Boylston, Mass); Oct 19 (Science Park, Boston, Mass); Dec 1 (Annual Meeting—Hotel Vendome, Boston)

PHILADELPHIA SECTION
Sept 28 (Abraham Lincoln Hotel, Reading, Pa); Nov 2 (Drake Hotel, Philadelphia, Pa); Dec 7 (Kugler's Restaurant, Philadelphia, Pa)

PIEDMONT SECTION
Oct 6 (Annual Meeting—Hotel Charlotte, N C)

RHODE ISLAND SECTION
Oct 18 (Johnson's Hummocks Grille); Dec 6 (Annual Meeting, Johnson's Hummocks Grille)

SOUTH CENTRAL SECTION
Dec 1 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION
Sept 22 (Columbus, Ga); Dec 8 (Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Oct 5 (Annual Meeting—Hartford, Conn); Nov 16 (Rapp's Restaurant, Shelton, Conn)

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COLOUR INDEX ANNOUNCEMENT

July 31, 1956

To Colour Index Subscribers:

From our collaborators, The Society of Dyers and Colourists, who are supervising printing in England, we have the following, which we believe will be of interest to you.

Dear Sir:

I have been instructed to inform you of the proposals for publishing the SECOND EDITION of the COLOUR INDEX which is nearing completion, and to express regret for the delay in publication.

The work is in FOUR VOLUMES and is being published by the Society of Dyers and Colourists and the American Association of Textile Chemists and Colourists.

There have been unforseen delays in course of preparation, but publication will commence with the delivery of the FIRST VOLUME before the end of this year. VOLUME TWO, if not despatched at the same time, will follow soon afterwards. This is to be followed by VOLUME THREE and finally VOLUME FOUR to be published in the early part of 1957.

I am,

Yours Faithfully,
John W Nicholls,
General Secretary

THE SECOND EDITION
of
THE COLOUR INDEX
IN FOUR VOLUMES

published by

The Society of Dyers and Colourists
and
The American Association of Textile Chemists and Colorists

The work has been completely re-designed and brought up-to-date with the co-operation of all the dye manufacturers in Great Britain, America, Western Europe, India and Japan. The 2nd Edition is in three main parts.

PART I— consists of two volumes each of approximately 1,000 pages. It deals with all commercially homogeneous dyes and pigments in current use (approximately 4–5,000 dye entities and 25,000 commercial names) within groups relating to their main usage, e.g. Disperse, Acid, Azoic, Direct, Pigment, Solvent etc. The data included comprises the commercial name and manufacturer's initials, methods of application, fastness properties, established usages, reactions on the fibre and literature references relating to application. In the absence of a single accepted international system of fastness assessment it has been necessary, in this Edition, to make provision for the inclusion of data according to one or more of the following—

A— (American) The methods of The American Association of Textile Chemists and Colorists.
B— (British) The methods of The Society of Dyers and Colourists.
C— (Continental) The methods of the Deutsche Echtheitskommission.

An important feature of PART I is the sub-division of each usage group into hue groups— Yellow, Orange, Red, Violet, Blue, Green, Brown and Black. The hue classification has been made by reference to a Hue Indication Chart which has been designed specially for the purpose. A copy of the chart is included with each set of volumes.
Each dye or group of identical dyes carries a PART I serial name and number, e.g. **C.I. Vat Orange 1**, and also a five digit PART II number in those cases where the chemical constitution of the dye is known.

PART II— is one volume of approximately 700 pages. It contains data relating to chemical constitution, method of preparation, patent and literature references relating to manufacture or constitution, solubilities and reactions in substance for approximately 3,800 dyes and pigments. The 1st Edition recorded 1,316 constitutions, and this very big increase is partly due to the fact that many co-operating dye manufacturers have, for the first time, disclosed the constitution of certain of their dyes. In addition there is the information contained in the reports compiled by Allied Investigating Commissions on the German Dyestuff Industry.
The dyes are arranged in order based on their chemical constitution following broadly the lines of the 1st Edition. A number of refinements have been introduced and there are two new sections, viz— AZOIC (the coupling components and the diazo components for the production of Insoluble Azo dyes on the fibre) and PHTHALOCYANINE.
Each entry carries a five digit reference number. These numbers do not progress in unit steps as provision has been made to allow the insertion of new constitutions in later editions or supplements without having to change the numbers now allocated in the 2nd Edition. Each entry also carries the complementary PART I serial name and number thus providing easy cross reference to the data in PART I. It also contains alphabetical and empirical formula indexes to all the Intermediates relating to individual dye entities.

PART III— is one volume of approximately 400 pages containing the general index to PART I and PART II (see CONTENTS, [iv]). The Commercial Names Index includes the names (in italics) of dyes not in current use, many of which are related to data in PART I and/or PART II.

EXAMPLE OF ENTRY IN PART I

C.I. 69025 Anthraquinone **C.I. Vat Orange 1**

APPLICATION

DYEING

METHOD

A/Q1 ☐
A/Q2 ■
A/Q3 ◘
Indigoid ☐

LEUCO COMPOUND
Alkaline, orange brown
Acid, brownish yellow

PROPERTIES (COTTON) Affinity and levelling, good. For data on strike, levelling and migration see *JSDC*, **66** (1950), 505
Suitable for pigment pad-jig, pad-steam, continuous piece and vat-acid processes

Vat in short liquor

Cotton Affinity and levelling good. Dead cotton covered fairly well
Viscose Good affinity at low temperature; at high temperature the hue is redder and duller
Cotton/Viscose Good solidity when dyed cold. At 50°C viscose dyed heavier than cotton
Silk Suitable

PRINTING

Cellulose Applied by normal processes giving redder and duller hues than when dyed. Dischargeable in pale and medium shades in the presence of an assistant

FASTNESS PROPERTIES etc

	A	B	C
CROSS DYEING (Chrome)	..	5	5
HOT PRESSING ...	5	5	5
HYPOCHLORITE ...	5	5	5
LIGHT ½–½ Normal	5–6	6	6
Normal	6–7	6–7	6
2× Normal	..	7	6–7

	A	B	C
MERCERISING ...	5	5	5
PEROXIDE BLEACHING	5	5	5
SODA BOIL (open kier)	4–5	5	5
SODA BOIL followed by HYPOCHLORITE ... (Combined test)	4–5	4–5	..

Tendering on exposure to light not accelerated

FASTNESS ON SILK (B) Degumming 5, Hot pressing 5, Light 6–7, Peroxide bleaching 4–5

TEXTILE USAGE

DYEING

Cellulose On account of good level dyeing and all-round fastness as a shading colour where good light fastness is required. Suitable for curtains, hangings and for goods to be bleached, e.g. shirtings and towels

Silk For good fastness to degumming, peroxide bleaching and washing

Unions For cotton/viscose fabrics

PRINTING

Cellulose For direct print styles or as pigment with binder on cotton and viscose

HUE **Yellowish Orange**
ARTIFICIAL LIGHT: redder

Benzadone Gold Orange 3G	**YDC**
Caledon Gold Orange 3G	**ICI**
Carbanthrene Golden Orange 3G ...	**NAC**
Cibanone Golden Orange 3G	**Ciba**
Cibanone Golden Orange 3G Ⓟ ...	**Ciba**
Fenanthren Golden Orange 3G ...	**G**
Indanthren Golden Orange 3G ...	**FBy**
Indanthrene Golden Orange 3GA ...	**G**
Indanthrene Golden Orange 3GF ...	**G**
Indanthrene Golden Orange 3GWP ...	**G**
Ponsol Golden Orange 3G	**DuP**
Ponsol Golden Orange 3GD	**DuP**
Sandothrene Golden Orange N3G ...	**S**
Solanthrene Orange 3J	**Fran**
Tinon Chlorine Golden Orange 3G ...	**Gy**

Reactions on Cellulose
H_2SO_4 conc.— greenish blue

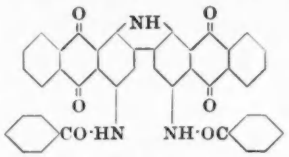
An example from the Vat dyes section of Part I is reproduced above and a specimen page (carbazole vat dyes) from the Anthraquinone section of Part II is shown opposite.

These two examples illustrate the information which appears in Parts I and II and demonstrates the dual reference system which connects the two Parts, e.g.

C.I. Vat Orange 1 in Part I and **C.I. 69025** in Part II are complementary.

The format for the dyes in Part I varies with the amount of information available. Some dyes occupy a whole page, others only part of a page. For example, the space occupied by these notes may be used to accommodate information on **C.I. Vat Orange 2.**

69005 **C.I. Vat Green 9** (*Brownish grey → Dull olive*)



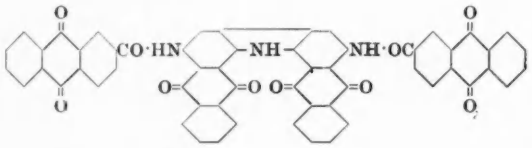
(*a*) Condense 1-benzamido-4-chloroanthraquinone with 1-amino-4-benzamidoanthraquinone in presence of copper and cyclise with chlorosulfonic acid
(*b*) Cyclise 4,4′-dibenzamido-1,1′-dianthrimide in sulfuric acid and oxidise the product

$Na_2S_2O_4$, alkaline — reddish brown; acid — yellowish brown

Discoverer — W. Mieg 1910
Bayer Co., *BP* 2702/09, 11932/09, 25986/09, 29352/10, 15753/12; *USP* 986521, 996109; *FP* 400653, 409407, 432449; *Sw.P* 55556; *GP* 220581, 225232, (*Fr.* **9**, 764, 1197), 228992, 239544, (*Fr.* **10**, 644, 638), 464292 (*Fr.* **16**, 1354)
Brit. Dye. Corp., *BP* 289191
BIOS 1493, 29; *FIAT* 1313, **2**, 135
FIAT 764 — Indanthrenoliv R
Vlies, *JSDC*, **30** (1914), 29
Fierz-David, 584 and Suppl. 82
Houben, 466, 662
Mayer, 181
Fierz-David & Blangey, Table 19
Fraser-Thomson, *JSDC*, **52** (1936), 242
Thorpe, **1**, 422

Soluble in *o*-chlorophenol
Slightly soluble in chloroform, pyridine
Insoluble in acetone, alcohol, toluene, xylene
H_2SO_4 conc. — red; on dilution — flocculent olive green ppt.

69010 **C.I. Vat Green 22** (*Olive*)

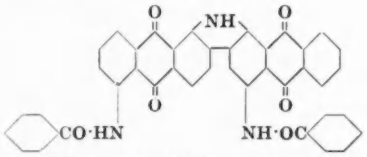


Condense 4,4′-diamino-1,1′-dianthrimide with 2 mol. 2-anthraquinonecarbonyl chloride and cyclise

Discoverer — F. Baumann 1929
I.G., *BP* 349714; *USP* 1819014; *FP* 696423; *GP* 513608 (*Fr.* **17**, 1398)
BIOS 1493, 28
FIAT 764 — Indanthrenoliv 3G

H_2SO_4 conc. — yellowish brown
$Na_2S_2O_4$, alkaline — reddish brown; acid — brownish yellow

69015 **C.I. Vat Brown 5** (*Brown*)



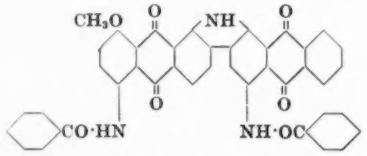
Condense 1-benzamido-5-chloroanthraquinone with 1-amino-4-benzamidoanthraquinone in presence of copper and cyclise with sulfuric acid

$Na_2S_2O_4$, alkaline — reddish brown; acid — yellowish brown

Discoverer — W. Mieg 1910
Bayer Co., *BP* 2702/09, 11932/09, 25986/09, 29138/09, 29352/10, 15753/12; *FP* 400653, 432449; *GP* 220581, 225232, (*Fr.* **9**, 764, 1197), 228992, 239544, (*Fr.* **10**, 644, 638), 491428 (*Fr.* **16**, 1349)
Brit. Dye. Corp., *BP* 289191
BIOS 1493, 10, 12; *FIAT* 1313, **2**, 106
FIAT 764 — Indanthrenbraun R, FFR
Fierz-David, 576 and Suppl. 82
Mayer, 181
Fraser-Thomson, *JSDC*, **52** (1936), 243
Thorpe, **1**, 422

Slightly soluble in xylene
H_2SO_4 conc. — dull wine red; on dilution — reddish brown flocculent ppt.

69020 **C.I. Vat Brown 36** (*Reddish brown*)

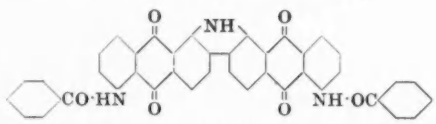


(*a*) Condense 1 - amino - 4 - benzamidoanthraquinone with 1 - benzamido-5-chloro-4-methoxyanthraquinone and cyclise
(*b*) Condense 1 - amino - 4 - benzamidoanthraquinone with 1 - benzamido-5-chloro-4-hydroxyanthraquinone, methylate the hydroxy group and cyclise with sulfuric acid

Discoverer — F. Baumann 1926
I.G., *BP* 298696; *USP* 1885172; *GP* 481362 (*Fr.* **16**, 1326)
BIOS 1493, 44
FIAT 764 — Indanthrenrotbraun 5RF
Fox, *JSDC*, **65** (1949), 513

H_2SO_4 conc. — violet; on dilution — red
$Na_2S_2O_4$, alkaline — brown; acid — brown (yellower)

69025 **C.I. Vat Orange 1** (*Yellowish orange*)



(*a*) React 5,5′-dibenzamido-1,1′-dianthrimide with sulfuric acid and oxidise
(*b*) React 1-benzamido-5-chloro-anthraquinone with 1-amino-5-benzamidoanthraquinone in the presence of nitrobenzene and cupric chloride

Discoverer — P. Fischer 1910
Bayer Co., *Sw.P* 115114
Cassella Co., *GP* 239544 (*Fr.* **10**, 638), 249000 (*Fr.* **11**, 621)
BIOS 1493, 15, 77; *FIAT* 1313, **2**, 119
FIAT 764 — Indanthrengoldorange 3G
Fierz-David Suppl. 82
Thorpe, **1**, 423

Slightly soluble in nitrobenzene, tetralin, xylene
Insoluble in alcohol
H_2SO_4 conc. — greenish blue; on dilution — orange
$Na_2S_2O_4$, alkaline — yellowish brown; acid — yellow

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Acid Dyes (including the premetallised dyes) — Mordant Dyes — Basic Dyes — Disperse Dyes — Natural Dyes and Pigments — Food (Food, Drug and Cosmetic) Dyes

VOLUME 2 — Direct Dyes — Sulphur Dyes — Vat Dyes — Ingrain Dyes — Azoic Dyes (sub-divided into Coupling Components, Diazo Components and Azoic Compositions) — Oxidation Bases — Pigments (inorganic and organic) — Solvent Dyes — Fluorescent Brightening Agents — Developers — Reducing Agents

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THE SOCIETY OF DYERS AND COLOURISTS
DEAN HOUSE 19 PICCADILLY
BRADFORD 1 YORKSHIRE
ENGLAND

THE AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS
LOWELL MASS
USA

PHOTOS TAKEN AT RECENT RHODE ISLAND SECTION AFFAIRS
(Photos courtesy of John E. Trevise, Karasell Chemical Corp)

"Wash and Wear" Fabrics———

(concluded from page P550)

Observation of this data shows that the fiber-reactant resin produces the highest degree of crease recovery and also a corresponding loss in other physical properties. The formulation with the fiber-reactant resin is rated satisfactory for "wash and wear."

Other ingredients in the finish formulation should be kept at a minimum which is consistent with desirable fabric properties, such as tensile and tear strength. Several materials have been used for this purpose; however, the most suitable have been some types of durable water-repellent or silicone emulsions. The principal function of these compounds has been to provide lubrication rather than as water repellents. It may be that these materials also contribute other desirable properties upon "wash and wear" characteristics as well as improving tearing strength and sewability.

Because the ideal finish is usually quite soft, various materials have been tried to improve the hand without adversely affecting "wash and wear" properties. Such materials as starch, polyvinyl alcohol, etc, which tend to react with the resin to form surface deposits are generally not satisfactory. Some thermoplastic materials and some acrylic copolymers have been found to improve the fullness and firmness to a limited extent without adversely affecting "wash and wear" properties.

LITERATURE CITED

(*1*) Lippert, A D, "Characteristics of Wash and Wear Cottons," delivered at Chemical Finishing Conference, National Cotton Council, September 21, 1955

(*2*) Williams, Charles R, "A Study of Wash and Wear Cottons" *Am Dyestuff Reptr* **45**, No. 14, P471 (July 16, 1956).

PHOTOS TAKEN AT RECENT RHODE ISLAND SECTION AFFAIRS
(Photos courtesy of John E Trezise, Karasell Chemical Corp)

Activities of the Local Sections

Philadelphia

THE Philadelphia Section has completed plans for its September 28th meeting, to be held at the Abraham Lincoln Hotel, Reading, Pa. This meeting will be highlighted by visits to Althouse Chemical Company and Berkshire Color and Chemical Co, from 1:00 to 4:00 PM.

The theme of the entire meeting will be in keeping with the Perkin Centennial. A paper entitled "Light Source as Used in Dyeing and Color Matching" will be presented by Warren B Reese, Macbeth Corp, Newburgh, NY.

During the Cocktail Hour from 6:00 to 7:00 PM, Cook's German Band will provide the entertainment, and will continue playing through dinner.

Members of the Committee making the arrangements are: Harold DeTurck, Berkshire Knitting Mills; William Knerr, Liberty Dye Works; M Bartholomew, Reading Dyeing Co; Alfred Koch, Sandoz Chemical Works, Inc; John Auman, Althouse Chemical Co, Inc; Francis Mills, Abraham Lincoln Hotel; Thomas Hart, Hart Products Corp; Kenneth Schmalenberger, Geigy Dyestuffs; Edward Diehl, Ankokas Dyeing and Processing Co; and Malcolm Reider, Pagoda Industries, Inc.

Hotel reservations may be made by writing direct to the Abraham Lincoln Hotel.

Rhode Island

JOHN Janket, Consolidated Bleachery, defeated Tom Larson, Carbic-Moss Corp, in a special playoff after the two men had tied for low gross honors with 75s at the annual outing of the Rhode Island Section on June 15th at the Pawtucket Country Club. Mr Janket's victory gave him his first leg on the Section's golf trophy and also ended a string of three consecutive tournament victories by Mr Larson. Total attendance at the outing was 365.

B B Fernald, Esmond Chemical Co turned in low net with a 77-6-71, nosing out T Anderson, J U Starkweather, who also had a 71 net, but a 15 handicap.

Other winners were as follows: *low gross, Class B*—A MacKenzie, Stillwater Worsted Co, and D Capuano, Crown Chemical Co, 91; *low net, Class B*—A Poitras, Dartmouth Finishing Co, and W Grafton, American Cyanamid Co, 72; *low gross, Class C*—George Wood, Apponaug Co, 111; *low net, Class C*—H Alexander, Owens-Corning Fiberglas Co, 72; *longest drive*—E Allard, National Aniline Div; *nearest to the pin*—G Montgomery, Arkansas Co, Inc; *most fives*—B Raffanti, Queen Print Co; *most sixes*—A Viola, Barry Chemical Co; *Putting*—J Hand, Queen Print Co.

Hudson-Mohawk

THE eighth annual outing of the Hudson-Mohawk Section was held June 22, 1956 at the Antlers Country Club, Amsterdam, NY.

Prizes were awarded to the following winners of the various events:

Golf—Frank Murphy, 1st low gross; Carson Thompson, 2nd low gross; Dick Ritter, 3rd low gross; Dick Evans, 4th low gross; Dave Hamer, high gross; and Dick Mackie, putting.

Horseshoes—Art Bessette, singles; Frank Rogan and Dave Hamer, doubles.

The outing was under the general chairmanship of Charles Barnes, assisted by the following committeemen: John Merrill, reservations; Norton Pratt, door prizes; Robert Quiri, golf publicity; Ed Chevrette, horseshoes; Floyd Szcerek, reception and tickets; Irv Smith, music; Ken Leslie, Ciba Trophy; Walter Drautz, banquet; and Al Rooney, putting.

Western New England

THE Annual Meeting and Election of Officers of the Western New England Section will be held October 5th at Hartford, Conn, rather than October 15th, as has been listed in the AATCC Calendar.

Piedmont

FOUR hundred and thirty two members and guests turned out for the 1956 annual outing of the Piedmont Section, held June 8-9 at Mayview Manor, Blowing Rock, NC.

Planned activities began Friday night with a millionaires party, which was followed by a dance.

The annual golf tournament, held on Saturday at the Blowing Rock Golf Course with 170 participants, produced the following winners: *low gross*—Dick Rendleman, Proctor Chemical Co; *low net*—M F Spencer, Cannon Mills, and W E Rixon, Carbide and Carbon Chemicals Co; *low gross, Mill Div*—Gordon S Eaves. Cloverdale Dye Works; *low net, Mill Div*—W F Harper, Hudson Hosiery Co; *low gross, Suppliers Div*—Sanford P Young, Joseph Bancroft & Sons Co; *low net, Suppliers Div*—Dan Rion, Nopco Chemical Co.

Mrs Clyde Whiteside and Mrs Lee McArthur took top honors in the ladies bridge tournament and ladies canasta tournament, respectively.

Other activities included a bingo party, shuffleboard, putting, swimming and horseshoes.

Part of the numerous door prizes were awarded Saturday afternoon. A social hour was held prior to the Saturday night buffet.

At the dance Saturday evening, the prizes for the golf tournament and door prizes were awarded. Also the following were announced to serve as officers for the Piedmont Section for 1957:

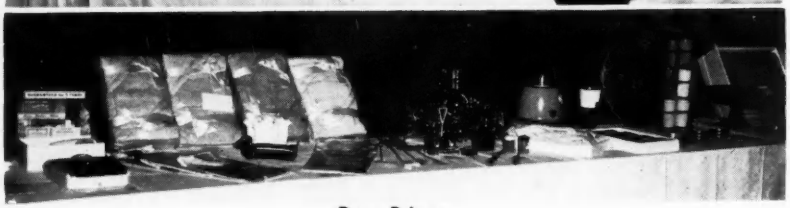
Chairman: Clement O Stevenson, Ciba Co, Inc.

Vice-chairman: W E Rixon, Carbide and Carbon Chemicals Co.

Secretary: Linton C Reynolds, Riegel Textile Corp.

PIEDMONT SECTION SUMMER OUTING COMMITTEE (l to r)—Jim Balloch, Ivey Chemical Co, chairman; Cal Martin, E J Feeley & Co; Tom Ratajczack, Althouse Chemical Co; Jim Whalen, Becco Sales Corp; Jim Navey, Johnson Motor Lines, Inc; Dick Rettew, Polymer Southern; Bob Ward, Leaksville Woolen Mills.

Golf Prizes



Door Prizes

Cal Martin awarding cup to Dick Rendlemen for low gross

Millionaires party

Millionaires party

Millionaires party

Social hour

Buffet

Buffet

Treasurer: J C King, Metro-Atlantic, Inc.

Councilors: *(3 years)* Clarence Hooper, Burlington Industries, Inc; Paul B Stam, Burlington Industries, Inc.

Councilor: *(1 year)* R Hobart Souther, Cone Mills Corp.

Custodian: A R Thompson, Ciba Co, Inc.

Sectional Committee: J Leslie Heaton, Bishopville Finishing Co; Henry H Latham, Arkansas Co, Inc; Daniel H Torrence, Jr, Ciba Co, Inc; Robert L Ward, Leaksville Woolen Mills, Inc.

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The 1956 Spring Meeting of the Piedmont Section was held April 7th at the Hotel Sir Walter in Raleigh, NC.

The Research Committee met at 9:30 AM at which time reports from the various subcommittees were given. Approximately 45 were in attendance. At 11:00 AM, students from Clemson College presented a paper entitled "A Study of Some Effects of Reverse Twist Yarn in Crease Resistant Goods."

At the technical session held in the afternoon, two papers were presented: "New Developments in Peroxide Bleaching" by J T Moore, Electrochemicals Department, E I duPont de Nemours & Co, Inc, and "Silicones in the Textile Industry" by Alton A Cook, Arkansas Co, Inc.

A social hour preceded the banquet in the Elizabeth Room. Attendance was approximately 125. Bertrand W Hayward, president of the Philadelphia Textile Institute, spoke on "Textile Education and the Industry."

Minutes——

TWO HUNDREDTH AND FIRST MEETING OF THE COUNCIL*

April 20, 1956
Benjamin Franklin Hotel, Philadelphia, Pa

THE Council held its 201st meeting in the Benjamin Franklin Hotel, Philadelphia, Pa, on Friday, April 20, 1956. Present were President Raymond W Jacoby presiding; Joseph H Jones, Ernest R Kaswell and Frederick V Traut, vice presidents; Charles W Dorn, chairman of the Executive Committee on Research; J Robert Bonnar, Carl Z Draves, Henry F Herrmann, Thomas R Smith, and P J Wood, past presidents; George O Linberg, John P Ploubides and Frank J Rizzo representing Northern New England; Francis H Casey, Ernest J Chornyei, Edward H Gamble and Raymond B Taylorson representing Rhode Island; Raymond J Carey and Rudolph C Geering representing Western New England; Bernard K Easton representing Niagara Frontier; Irwin J Smith representing Hudson-Mohawk; Matthew J Babey, William F Brommelsiek, Percy J Fynn, John H Hennessey, Paul J Luck and Donald E Marnon representing New York; Arthur W Etchells, Clarence A Seibert, Richard A Shimp, and Jackson A Woodruff representing Philadelphia, Lawrence L Heffner representing Washington; A Henry Gaede, Harley Y Jennings, Henry A Rutherford and Arthur R Thompson representing Piedmont; Robert B Hollowell representing Southeast; L B MacFarland representing Mid-West; James A Doyle, chairman, Publicity Committee; Thomas H Hart, chairman, Philadelphia Section; William A Holst of the Committee on Constitution and Bylaws; Albert E Johnson, chairman, Corporate Membership Committee; Thomas R Scanlan, Jr, Publicity Committee; Harold W Stiegler, director of research; Charles A Sylvester, chairman, Technical Committee on Research; Percival Theel, Publications Committee; Louis B Cook, Ernst W Empting, Patrick J Kennedy, Raphael E Rupp, R Hobart Souther; and Richard R Frey of the secretary's office.

Mr Jacoby opened the meeting with the announcement that the secretary, H C Chapin, due to an illness, was missing his first Council meeting since 1933. On motion by Mr Traut it was voted to send a telegram to Dr Chapin expressing the Council's good wishes for a speedy recovery.

At Mr Jacoby's request the entire Council rose in silent tribute to the late George L Baxter, former vice-president, Central Atlantic Region.

It was voted to give the assistant secretary power to sign checks on the secretary's accounts.

The Council voted approval of the following to serve on the Archives Committee, as requested by Sidney Edelstein, chairman: William H Cady, Norman A Johnson, Martin J Lydon and P J Wood.

The secretary's report of the 200th meeting of the Council, the financial report, dated March 19th, and treasurer's report of April 4th, were accepted.

APPROPRIATIONS COMMITTEE ——In Mr Sampson's absence the report was given by Dr Draves. The Appropriations Committee requested and received approval of a sum of $38.14 to cover the bonding of the newly appointed assistant treasurer, plus an appropriate sum for the bonding of the assistant secretary. In light of future heavy Association expenditures and ascertained high cost of pensions, the Committee requested that action on the subject of pensions for Association employees be tabled temporarily, and that the study be continued; also suggested a study of the advisability of engaging investment counsel. On further recommendation of the Committee, the Council voted approval of the following: 1) To transfer the $5000 checking account, drawing 1% interest in the First National Bank of Boston, to the Association's three savings banks to provide a 3% yield on this sum; 2) Because of a rapid build-up of the Association's checking account in November with the receipt of dues payments, the treasurer be authorized to purchase and sell such sums of U S Ninety-Day Certificates (yield approximately 2.8%), as may be prudent to avoid excessively large sums lying idle in this account.

VICE PRESIDENTS' REPORTS ——J H Jones, Midwest Region, on progress of the 1958 Convention, reported that Elliott Morrill (The Best Foods, Inc) was appointed chairman, Edwin I Stearns (American Cyanamid Co) vice chairman; the May 5th midyear meeting of the Mid-West Section will be in Milwaukee and the outing at Brown's Lake, Burlington, Wisconsin. Mr Kaswell, New England Region, in deference to a long agenda had no report. Mr Traut, Central Atlantic Region, reported his planned trip to Niagara Frontier and Hudson-Mohawk Sections. Also, that the Philadelphia Section's completed educational program had enabled them to present to the Philadelphia Textile Institute another $500.00, bringing the total to $2000. In the absence of Dr Scott, Southern Region, there was no report.

CORPORATE MEMBERSHIP COMMITTEE——Mr Johnson reported an expected total income of $65,000.00 for the fiscal year 1956, of which $60,012.50 has already been received. Approximately $5,000.00 from dividents, interests, unpaid old and new memberships and miscellaneous income will make up the difference between monies received and expected. Mr Johnson also reported that the first year's membership extension campaign has produced 68 new members and an increment of dues payments by approximately 60 Corporate Members.

EXECUTIVE COMMITTEE ON RESEARCH——Mr Dorn reported that the Executive Committee on Research has authorized the Technical Committee on Research to:—

1) Set up the committee for test methods to evaluate coloring agents.
2) Drop the reference committee for the aging tests.
3) Follow the recommendations of

*Revised

the joint AATCC-ASTM committee for an interchange of representatives of AATCC and ASTM Committees to serve as observers.

4) Approve the setting up of reference committees on the use of radioactive substances in test methods.

5) Reactivate the committee on colorfastness to review present test methods in relation to the newer man-made fibers.

6) Appropriate increased funds for further study of lightfastness of textiles in natural light.

Mr Dorn reported receipt of an extensive report from the National Research Advisory Committee containing numerous possibilities of projects for Committee study. Also that William Appel, official representative of AATCC at the ISO meetings to be held in May, 1956 in England, has been instructed to present all of the AATCC test methods on water resistance for consideration as international standards; the Committee on Definitions has reviewed the British proposals and their findings are also in the hands of Mr Appel.

That the director of research, Harold W Stiegler, has presented his quarterly report in a new form which will be used for projects at Lowell, giving separately the authorization of the project, date of inception, estimated cost, cost to date, accomplishments, estimated extent of work and total cost.

That Executive Committee on Research authorization has been given for purchase of an additional Accelerotor and a new file cabinet for use in Lowell.

Further reported that, due to circumstances, the Executive Committee on Research unanimously passed the following resolution:—"The Executive Committee on Research of the American Association of Textile Chemists and Colorists, taking cognizance of the fact that some organizations performing fastness tests on textiles use test methods designated as being standard AATCC methods wherein the methods actually do not conform with AATCC recommended procedures, goes on record as stating that such different or modified methods should not be referred to as AATCC procedures, and requests that such references not be used."

In conclusion, Mr Dorn reported that the AATCC has completed the selection of test procedures recommended for inclusion in Commercial Standard CS-59, Textiles-Testing and Reporting, and that these will be submitted as soon as the ASTM completes and selects their own methods.

SPRING 1957 COUNCIL MEETINGS——An invitation was extended by Clarence Hooper, chairman of Piedmont Section, for the Association to hold its Spring 1957 Council Meeting in Roanoke, Virginia. It was moved and seconded that the Spring 1957 meeting of the Council be held at Roanoke, Virginia. The motion was carried.

EXECUTIVE COMMITTEE ON RESEARCH———At this point Mr Dorn augmented his ECR report by advising that the new lightfastness standards had been accepted by the ECR, and suggested a rising vote of thanks to Frank Rizzo for his tremendous amount of work in the preparation of these standards. The Council rose and applauded Mr Rizzo.

Mr Dorn further advised that these Standards are available in limited amounts to those in immediate need, by writing to Lowell. They will be sold on a basis of future billing when actual cost has been determined.

PRESIDENT'S ADVISORY COMMITTEE———Mr Bonnar prefaced the report of this Committee with a short review of its early activities culminating in the concentration of study on one subject. Mr Jacoby added that, as a result of the report of the President's Advisory Committee at the January Council meeting, he was authorized to appoint a committee to study the matter of organization of the AATCC and report findings to the Council. The Temporary Committee was appointed with Henry Herrmann serving as chairman.

Before receiving Mr Herrmann's report, Mr Jacoby pointed out the successful functioning of the Association in the past with volunteer help, and that there were no intentions of discontinuance of same within certain limitations. An example was cited whereby a potential candidate for the office of president, in spite of the prestige of the office had been refused permission by his company to hold such office because of the time-consuming activities involved. Mr Jacoby further advised of the serious situation currently confronting the Association in that the secretary's resignation becomes effective August 1, 1956, and that the treasurer has been incapacitated due to illness.

At Mr Jacoby's call for members to fill the office of secretary-treasurer on a volunteer basis there were no candidates. Mr Wood advised that he knew of a candidate for such office who would serve voluntarily, requesting only that his expenses be paid, and would be available on retirement from his company. It was pointed out, however, that such retirement was three and one half years hence.

At this point Mr Herrmann was asked for his report, which follows:—

The interim report of the Interviewing Subcommittee of the Organization Committee was received. A number of candidates for the new position of executive secretary-treasurer were considered, one was interviewed and one declined. The Committee was in agreement that the services expected of this new administrator are far beyond the capacity of any man now on the Association's salaried staff, nor available to the Association on a volunteer basis. Further, the Organization Committee was of the unanimous opinion that the office of executive secretary-treasurer is necessary.

Here Mr Herrmann read answers to five specific points under contention which were:

1—What is happening to the Association's volunteer ideology?

2—Isn't the cost of this office excessive and will it not have a bad effect upon our other employees as well as their relations with the staff of Lowell Technological Institute?

3—Where is the money coming from?

4—Will our Corporate Members look with disfavor upon this expenditure?

5—Do we feel that this executive officer is necessary to accomplish the desired ends?

Mr Herrmann presented facts and figures to answer these questions. He concluded his report with the recommendation of his Committee to the president that he, the president, direct the assistant secretary to take over as much of the duties of the secretary as possible in order to relieve Dr Chapin of this work during his illness and convalescence, as well as to acquire first-hand experience in the conduct of this office.

A motion was made by Mr Carey, and seconded, to the effect that in order to clarify the position of the president, and the President's Advisory Committee, with respect to the availability of candidates to fill the position of executive secretary-treas-

urer on a volunteer basis, that the Council direct the president to contact, by mail, the sectional chairman to ascertain whether or not they, the sectional chairmen, could advise of any volunteers for this position.

Following the motion there was considerable discussion in which it was pointed out, in part, that information on the subject of the new Association officer had already been sent to all Councilors with the request that they discuss the matter with members of their respective sections. Mr Hart commented that after thorough discussion they did not believe anyone available in the Philadelphia Section. Speaking for the Piedmont Section, Mr Gaede reported that he had discussed the matter with members of the Executive Committee of this Section, and in some cases the feeling was that not only are volunteers unavailable for this position but that the offices of the secretary and the treasurer should be paid positions. Mr Rizzo believed the question of volunteer service in the two areas of the Association's activities so vital to continued operation, to be antiquated, and thought definite consideration should be given to the hiring of an individual for this work. Dr Draves spoke well of the intent of Mr Carey's motion but believed no useful purpose could be served by such delay, and urged that vote be against the motion. In commenting on the motion Mr Herrmann agreed that the fact should be made known that the Association would give all consideration to volunteers, but he believed that as much as is reasonable had been done in that direction.

In light of the foregoing Mr Carey withdrew his motion and the second was also withdrawn.

Mr Herrmann continued with the recommendation of his Committee that nominations for this new position be made by the president and appointment by the Council. However, in that the president currently had no nominees, he requested that his Committee be instructed to continue its efforts to find a suitable nominee.

Mr Luck raised the question as to the procedure for the selection of a candidate for the position, and also questioned the ability of those responsible, to judge the suitability of a candidate. Mr Linberg replied to the foregoing in detail, pointing out, in part, the efforts already made, the calibre and qualifications of men interviewed and the selectiveness of his Committee. Mr Linberg concluded by stressing the immediate need for the creation of this position and the Association's ability to afford it.

Mr Luck conceded that he had apparently misunderstood the intent, believing that the Association was looking for a professional secretary.

A motion was made by Mr Smith and seconded that the position of "executive secretary-treasurer"* as outlined in the proposed plan for reorganization be created and that the Interviewing Committee (a subcommittee of the President's Advisory Committee) be instructed to continue its efforts in trying to locate the proper person for the position.

The details of the proposed plan are:

1) A new office be created — among the suggested names for which were — secretary-treasurer — executive secretary — administrative secretary.
2) The duties to be:

   Functions relinquished by the retiring secretary and treasurer.

   To be responsible for Council and special committee meeting minutes.

   To record and administer acts, motions and resolutions of the Council.

   To be an ex-officio member of all committees of the Council.

   To supervise and/or to co-operate with special AATCC projects as directed by the president.

   To supervise the work of the assistant secretary.

   To be the administrative head of the AATCC personnel and installation at the Lowell Technological Institute, subordinate only to the president of the AATCC.

   To be the official liaison officer in dealing with the Lowell staff.

   It is difficult, if not impossible, to foresee all of the activities and duties which might fall upon him clearly delineated. The proper man for the job will intuitively know or search out those tasks which should command his attention and upon which he should spend his time and efforts for the benefit of the Association.

   A rational program of traveling and communication with Sections is desired. He is to visit all the Eastern and Mid-West Sections at least once a year; and Pacific Sections occasionally, as directed. An expense fund of not over $5,000 is anticipated. An orderly accounting for traveling expenses is taken for granted.
3) Salary to be—Not over $15,000 per year.
4) Initial agreement to run for three years.

On discussion of the motion an amendment was offered by Dr Draves and seconded that:

1) The title of the new Association officer be executive secretary.
2) The words "and treasurer" be eliminated from the first paragraph of item 2, "Duties to be."

Prior to a vote on the amendment, and in compliance with directions received from Mr Gillick that the following be made a matter of record, Mr Carey read instructions from Mr Gillick, chairman of the Western New England Section, that "the Western New England Section strongly recommends a 'Go Slow' attitude in the matter of the new administrative post."

P J Wood read a letter from W H Cady expressing complete accord with Mr Wood's views on the establishment of this new administrative position and concluded by giving Mr Wood his proxy to vote against the issue.

By vote the amendment to the motion was defeated by a vote of 24 to 13.

A vote on Mr Smith's motion was called for. An amendment was offered by Mr Gaede, accepted by Mr Smith and seconded, that the sentence detailing the specific duty to visit all Eastern and Mid-West Sections at least once a year; and Pacific Sections occasionally as directed, be eliminated from the paragraph outlining the proposed travel program.

Before a vote on the amended motion was taken, Mr Wood was advised, in response to his question, that the motion was open for discussion, whereupon Mr Wood protested to the establishment of this new office by presenting the following objections:

1) The proposed salary is excessive for this comparatively simple job.
2) Payment of such a salary would create a "political plum" in our organization which is undesirable.
3) It is proposed to give this man

NOTE: *When these minutes were submitted for approval by the Council at the Council Meeting of June 15, 1956 the Council voted as follows: The title of the new office is to be executive secretary-assistant treasurer.

almost unlimited power. He is to be both secretary and treasurer, which is undesirable.

4) We have ample quarters at the Lowell Technological Institute for which no rent is paid. Common courtesy demands that we do nothing that will cause hard feeling on the part of their professional staff. Paying such an exorbitant salary may alienate the friendship of the staff of the Institute, as it may well be more than any of them are being paid.
5) The duty of the Council is to pay no more than is necessary for supplies or personnel; to handle the funds of the Association as carefully as we would handle our own money.
6) The sum proposed is more than one-fifth (1/5) of the entire regular membership dues of the Association, which is entirely out of proportion.
7) Such a disproportion is likely to upset our own organization. We have over a dozen other employees to think of.
8) In my few contacts with regular members, outside of the Council, I find strong disapproval of this scheme.

Mr Holst also advised of the many changes in the constitution and bylaws that will be required in the event of a vote in favor of creating this new office, and it was subsequently decided that the details involved would have to be worked out as quickly as possible by the Constitution and Bylaws Committee.

On call for a vote the amended motion was carried by a vote of 31 to 2.

SUBJECT AND SPEAKERS BUREAU———Mr Babey reported progress in that his committee has now compiled a list of approximately 30 subjects and speakers.

CONSTITUTION AND BYLAWS COMMITTEE———A motion was made and seconded to send out for letter ballot to the Council the recommendations of the Constitution and Bylaws Committee, that Article IV, Section 9, of the Bylaws be changed to read "The Committee on Constitution and Bylaws shall consists of three (3) members appointed by the Council." Motion was carried.

Mr Jacoby, in mentioning the report of the National Research Advisory Committee by Edmund Leonard, made previously at the ECR meeting, expressed his appreciation on behalf of the Association for the very constructive program that had been laid out.

INTER-SOCIETY RELATIONS COMMITTEE———Dr Draves reporting for Mr Herrmann, who had asked to be relieved of the chairmanship of this committee resulting from increased activities at treasurer of the Perkin Centennial, received approval by vote of the Council to serve as chairman of this committee.

Dr Draves spoke of AATCC relations with other societies and reported that he was preparing a letter and questionnaire to be sent to all AATCC committees, authorized by the Council, to co-operate with other societies in promoting the Association's general aims. The purpose of the letter and questionnaire is to promote better AATCC administration of its relations with other societies. For each society with which the AATCC has relations the Committee will prepare a file based on the questionnaire.

Dr Draves continued by reporting that his committee recommended that for the present it continue to operate under the present Bylaws which give adequate authority for the appointment and operation of special committees.

The question of a revision of the bylaws to be taken up after the mechanism of regulating inter-society relations has been more thoroughly worked out and proved successful.

Two additional recommendations of the Committee, which were subsequently put into the form of a motion and so voted, were:—

1) Any member of the AATCC serving as a non-voting advisory representative shall not serve at the same time as a voting representative for another organization in the same activity.
2) When any other Association accepts a member of the AATCC as an official non-voting advisory representative at their meetings, they must agree that all press releases and official reports indicate clearly the non-voting advisory status of the AATCC representative.

Also voted, a recommendation by the Executive Committee on Research that where the ASTM and the AATCC have committees working on the same problem, the Executive Committee on Research is authorized to appoint an observer, without voting power, to sit in on the work of the ASTM Committee, and that the ASTM would be permitted to reciprocate in the same manner.

TEXTILE EDUCATION COMMITTEE———Mr Rutherford prefaced his report by pointing out the need for a program designed to stimulate student interest in textiles as a career. Following, Mr Rutherford read his report in which was outlined the plans for a program covering, in part, such points as what other industries are doing to attract students to their particular industries, the leading part AATCC could play in such a program, the hiring of a paid administrator and the financing of a program by contributions from the textile industry. (The text of Mr Rutherford's report appears on pages P568-9 of this issue.)

PUBLICITY COMMITTEE——— Mr Doyle reported routine progress and that his committee had been cooperating with Ansco Bruinier, chairman of the Perkin Centennial Publicity Committee. On motion by Mr Doyle the Council approved the appointment of Thomas R Scanlan, Jr as vice-chairman of the National Publicity Committee.

MEMBERSHIP AND LOCAL SECTIONS COMMITTEE———Presented by Mr Jones, there were elected to membership, 10 Corporate, 82 Senior, 9 Junior, 24 Associate and 25 Student. There were 12 transferred from other classifications to Senior Membership. The application for a Student Chapter at Alabama Polytechnic Institute was also approved.

PUBLICATIONS COMMITTEE ———For Dr Scott, Professor Theel reported the discontinuance of the publishing in the *Year Book* of the 12 Test Methods borrowed from the Society of Dyers and Colourists. Also, that the Color Transfer Charts would not be printed in the *Year Book;* however, a suitable statement will appear advising of their availability.

Only abstracts of the Intersectional Contest Papers will be published in the Proceedings of the Perkin Centennial and that the full papers will be subsequently published in the *American Dyestuff Reporter.*

On commercialism in papers, it was the decision of the Publications Committee to have published, in an early issue of the *American Dyestuff Reporter,* the recently drafted resolution against such commercialism, and republish such resolution every six months—copies of the resolution to be mailed to the chairman of each Section.

(concluded on page P569)

A PROPOSED PLAN TO CREATE INTEREST IN TEXTILE EDUCATION

HENRY A RUTHERFORD
Chairman, AATCC Committee on Textile Education

This is the complete text of a report made by Mr Rutherford before the 201st meeting of the Council on April 20, 1956 at the Benjamin Franklin Hotel, Philadelphia, Pa.

FOR the past several years, enrollment of students in all college-level textile schools in the US has steadily dropped off. At the same time, the demand for textile-school graduates has steadily risen to the point where today's graduate averages a choice of seven positions. Both of these trends are clear cut, and are not related to population trends, industry or school location, or types of curricula offered. Beyond any doubt, the present situation is the result of lack of interest on the part of young people in the textile industry and the careers it offers. This lack of interest, in turn, is the result of poor public relations on the part of the textile industry, especially at the level of high-school students.

The situation is more critical in the case of textile chemists than for technologists, and extends beyond textile chemistry to the broader areas of chemistry. To cite one example, in the School of Textiles, N C State College, the school with the largest enrollment of all textile schools, there are only 6 students in the sophomore class who have elected textile chemistry.

At the last Council meeting, this Association indicated an interest in undertaking efforts to improve this situation. The organizational structure of the AATCC and its record of leadership in industry matters qualifies it as the organization best equipped to spearhead efforts to broaden the interest of young people in the textile industry and its careers.

It is the purpose of this brief report to recommend an organized plan for attacking the problem of "no interest in textiles" and to suggest a program to be carried out by the proposed organization.

It is assumed in drawing up this proposal, that the AATCC is willing to undertake an effort commensurate with the serious situation that industry faces. Therefore, after serious consideration of possible means for carrying out the program required, it is proposed that the effort be led by a full-time, paid, director for the program who would operate under the AATCC organization, who would carry out the policies approved by the AATCC Textile Education Committee, and who would make use of the organizational structure of AATCC to carry out the program on national and local levels. While such a program would undoubtedly be costly, it is felt that in the light of the cost of the overall program needed, this expense would be only a minor part.

The organization thus proposed is shown in Figure 1.

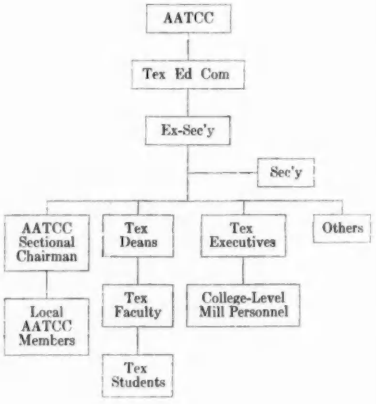

Figure 1

In this organization, it would be the function of the director or the executive secretary of the Textile Education Committee to formulate plans for attacking the program of "no interest in textiles" on the part of young people. These plans would then be submitted to the overall Education Committee for approval, and this committee would charge the director or executive secretary with the task of executing the plans.

The means by which this problem can be attacked are manifold. It is felt that there is little point at this time in going into detail as to how much effort should be put into what particular phase of the program, but rather the final details should be placed in the hands of the proposed director. However, it is fairly obvious that the means that would be employed would include 1) national and local advertising, sponsored either by funds raised by the Education Committee or by individual industrial firms as part of their own advertising efforts; 2) radio and television advertising and programs; 3) career information brochures for mailing to interested young men who may make inquiries as the result of advertising and for placing in high schools throughout the nation; 4) cooperative efforts with various guidance groups and youth organizations in providing career information on the textile industry; 5) arrangements for local follow-up of inquiries by local members of the AATCC; 6) arrangements for mills in various areas to participate in career days at high schools and to hold open house programs for interested young people; 7) use of various editorial services in providing information through newspapers and other periodicals; 8) activities to be carried out by textile colleges themselves to stimulate interest in textiles; and 9) efforts to develop scholarships to assist deserving and qualified young men who are unable to attend college for financial reasons. In connection with scholarships, it might be noted here that a recent survey made in North Carolina indicated that 7 out of 10 of the valedictorians and salutatorians in high school classes did not attend college primarily for financial reasons. This is a tremendous economic waste that neither the textile industry nor other industry in this nation can afford.

It is estimated that a director of this program could be maintained at an annual cost of about $25,000 covering salary, office, supplies, mailing cost, secretarial assistance, and other costs involved. The target for advertising expenditures for the first year for

this man should be not less than $100,000, such expenditures to be paid either from funds raised by the Committee or through efforts of the director in persuading various textile firms to expend some of their advertising budget on this matter. While such a financial burden is too great to impose on any one organization and on AATCC in particular, it is felt that the necessary funds can be developed from other industry associations provided the AATCC will take the lead in undertaking the effort required and possibly making an initial small contribution to implement the program. The cost required can also be rationalized on the basis that the textile industry is now being called on to expend funds that it well should have spent in the past, and is making an investment against losses to be incurred in the future through the lack of adequate leadership.

It has then been concluded as the result of extensive study of the textile enrollment situation over the past several months that an immediate and highly serious effort is called for, and that the nature of the effort required is such that it cannot be carried out adequately by voluntary members of various sub-committees. Evidence of the seriousness of the situation is inherent in figures presented at North Carolina State College in the past few days—that out of the total of 1,075 applicants for entrance into the College this Fall that have paid registration fees, 753 were registered for engineering and only 48 were registered for textiles or textile chemistry. It should be emphasized that this is typical, and is not merely a local condition. Considering that the mortality rate of students matriculating in the School of Textiles is in the neighborhood of 50%, and considering that some 10% of students at the School of Textiles come from abroad, and again that this situation is typical, it is evident from these figures that the textile industry will have "sparse pickings" in 1960.

In addition to the above we propose the following:

1) A joint meeting of association representatives, mill executives, and representatives, from textile education to combat the general attitude of "no interest in textiles." This should come spontaneously from concerned mills, associations and colleges. We are ready to attend such a meeting at any time, but there must be other expressions of interest.

2) A survey of textile education and the place of its graduates in industry.

3) Action to provide immediate career information on textiles to the high schools of the entire country. We hope AATCC will hold the lead in this program and soon have its career brochure released.

4) More active participation by industry executives in the advancement of textile education, not as a result of our pleading but as a result of enlightened self-interest.

If these four steps can be followed, other and no doubt better suggestions will evolve through the interactions of the groups working together. Textile education, like research, is not a thing apart from industry. It is of vital significance to industry—not a step-child, but a legitimate member of the textile family. Its problems are industry's problems and vice versa. All we are really asking is a positive, cooperative approach to mutual problems. We must, all of us, actively combat this public attitude of "no interest in textiles" and we cannot ourselves act as though we had no interest either.

201st Council Meeting———

(*concluded from page P567*)

NATIONAL CONVENTION COMMITTEE———For the Committee Mr Linberg reported the following:

1957 National Convention in Boston, Nov 14-16 inclusive—E R Kaswell, chairman; Headquarters — Hotel Statler.

1958 National Convention in Chicago, Elliott Morrill, chairman; Headquarters Hotel—Conrad Hilton.

1959 National Convention in Washington, DC—George S Buck, Jr, chairman; Headquarters Hotels—Sheraton Park and Shoreham.

On recommendation of the National Convention Committee the Council voted acceptance of the invitation from the Philadelphia Section to have Philadelphia as the site for the 1960 Convention.

For the Perkin Centennial, Mr Linberg advised that hotel reservation forms, a copy of the tentative program, plus additional information, would be mailed to all AATCC members very shortly and suggested that requests for room reservations be made at once. Also, warned of the possible deficit in the publication of the Proceedings of the Centennial. The report concluded with a run down of the events scheduled for the Centennial.

ARCHIVES COMMITTEE———In Mr Edelstein's absence, Mr Wood read a letter from Mr Edelstein, chairman of this committee, which advised in part of his successful trip to Lowell in search of suitable material, the location of Dr Olney's files, the talk with Martin J Lydon, president of the Lowell Technological Institute (during which the Association was offered a room for temporary storage of material collected), also, the recommendation that the Association accept this offer, and the suggestion that an archivist or historian be appointed in each Section. It was voted that Dr Lydon's offer be accepted with appreciation.

COLOUR INDEX MARKETING COMMITTEE———For Mr Sampson, Mr Holst reported the British accepting advance subscriptions beyond the originally planned deadline, receipt of galley and page proofs and information that the printers are past some of the obstacles which have been delaying publication expected this year.

No unfinished business.

NEW BUSINESS———Mr Easton commented on the difficulties encountered by small Sections in securing a National Convention and recommended that some consideration be given to the establishment of a system or policy enabling smaller Sections to be host for a National Convention.

Meeting adjourned 1:05 PM.

Respectfully submitted,
R R FREY
assistant secretary

Perkin Centennial Notes

GENERAL ANTHONY C MCAULIFFE, US Army (retired), will address those attending the AATCC Annual Banquet, September 15, at the Waldorf Astoria. The Banquet, concluding affair of the week-long Perkin Centennial celebration, is expected to attract a capacity audience.

General McAuliffe, since his retirement from the Army on June 1st, has been serving as general manager of American Cyanamid Company's Engineering and Construction Division. Prior to his retirement, he had held the post of commander-in-chief of the US Army in Europe since 1955. It was in Europe, during the "Battle of the Bulge" that Gen McAuliffe, then commander of the 101st Airborne Division, responded to a German demand for surrender with his now famous reply, "Nuts!"

General McAuliffe's chemical industry background is highlighted by his duties as chief of the Chemical Corps, which began in late 1949.

THOSE planning to attend the Perkin Centennial celebration are urged to register in advance, if they have not already done so. For your convenience, facsimiles of the front and back of the registration envelope are presented below. These will be accepted for advance registration. Mail to: Roy R Hamilton, Interchemical Corp, 150 Wagaraw Rd, Hawthorne, NJ.

Perkin Centennial

THE WALDORF-ASTORIA, NEW YORK, N. Y.
Week of September 10, 1956

REGISTRATION REPLY ENVELOPE

FOLLOW INSTRUCTIONS CAREFULLY

Be sure to fill out address completely so you will receive the Book of Proceedings of the Perkin Centennial

PRINT ..... Last Name ..... First Name ..... Initial

MAIL ADDRESS .....

.....

ASSOCIATION (One Only) .....
Use abbreviations shown on back of this envelope

CHECK ONE FOR EACH REGISTRANT MR ..... MRS ..... MISS .....

PRICES INCLUDE TIPS & TAXES

REGISTRATION	PRICE	NO.	AMOUNT
General Registration	$10.00		$
Lady Guests (No Book)	5.00		
Students (No Book)	5.00		
Ladies' Special Program	5.00		
International Day Luncheon—Sept. 10	10.00		
Olney Award Luncheon—Sept. 13	10.00		
Perkin Medal Award Dinner—Sept. 14	15.00		
Annual AATCC Banquet—Sept. 15	15.00		
Enclosed Check ☐ M.O. ☐	TOTAL		$

MAKE REMITTANCE PAYABLE TO "PERKIN CENTENNIAL 1956—AATCC"

MAIL AT ONCE TO:—Roy R. Hamilton, Interchemical Corp.
150 Wagaraw Rd., Hawthorne, N. J.

Applicants for Perkin Medal Award Dinner tickets will receive tickets and ties by mail.

All other tickets and registration badge must be called for at Reservation Desk, Grand Ball Room Check Room, Second Floor, The Waldorf-Astoria.

Registration fee is required for attendance at any function except the Perkin Medal Award Dinner.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
AAAS

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AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS
AATCC

•

AMERICAN CHEMICAL SOCIETY
ACS

•

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
AICE

•

AMERICAN PHARMACEUTICAL ASSOCIATION
A.Ph.A.

•

AMERICAN PSYCHOLOGICAL ASSOCIATION
APA

•

AMERICAN SECTION OF THE SOCIETE DE CHIMIE INDUSTRIELLE
AS, SCI

•

AMERICAN SOCIETY FOR TESTING MATERIALS
ASTM

•

AMERICAN STANDARDS ASSOCIATION
ASA

•

CANADIAN ASSOCIATION OF TEXTILE COLOURISTS AND CHEMISTS
CATCC

•

DRY COLOR MANUFACTURERS' ASSOCIATION
DCMA

•

ELECTROCHEMICAL SOCIETY
ECS

•

GOOD HOUSEKEEPING INSTITUTE
GHI

•

INSTITUTE OF FOOD TECHNOLOGISTS
IFT

INTER-SOCIETY COLOR COUNCIL
ISCC

•

MANUFACTURING CHEMISTS' ASSOCIATION, INC.
MCA

•

NATIONAL PAINT, VARNISH AND LACQUER ASSOCIATION, INC.
NPVLA

•

NATIONAL RETAIL DRY GOODS ASSOCIATION
NRDGA

•

OPTICAL SOCIETY OF AMERICA
OSA

•

SOCIETY OF CHEMICAL INDUSTRY
SCI

•

SOCIETY OF COSMETIC CHEMISTS
SCC

•

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
SOCMA

•

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY
TAPPI

•

TEXTILE RESEARCH INSTITUTE
TRI

•

THE AMERICAN LEATHER CHEMISTS ASSOCIATION
ALCA

•

THE COLOR ASSOCIATION OF THE U.S., INC.
TCA

•

THE SOCIETY OF DYERS AND COLOURISTS
SDC

•

THE SOCIETY OF THE PLASTICS INDUSTRY, INC.
SPI

News of the Trade

Berkshire C & C in Full Production at Reading

Full-scale production at Berkshire Color & Chemical Company's new facilities at Reading, Pa, is now under way, according to a recent announcement by E C Warshaw, president.

The new facilities, which have greatly increased Berkshire's productive capacity, are located in the former Bick Chemical Corp plant in Reading. The Bick Company was acquired by Berkshire ten months ago and, after halting production in February, was completely renovated and modernized with the most advanced equipment.

All dyestuff production, Mr Warshaw said, is being transferred on a gradual basis from the present Delawanna, NJ, plant and will shortly be concentrated at the Reading facilities.

Special emphasis at Reading will be given to the complete modernization of the intermediates division to serve Berkshire's expanding needs in that field. Also, plans are being drawn up for the further expansion of the Reading plant, with construction slated to begin next spring.

The Delawanna plant wil continue to house the general and sales offices of Berkshire. In addition, it will house a greatly expanded research and development department and laboratories with a view toward Berkshire's entry into the pigments and special products fields for a wide variety of industries, as well as dyestuff and intermediates research.

The acquisition by Berkshire of the Bick company was complete, including assets and physical plant, and its name changed to Berkshire Color Company, Inc, according to Mr Warshaw.

NBS to Relocate

A tract of approximately 550 acres of land near Gaithersburg, Md has been selected for relocation of the Washington laboratories of the National Bureau of Standards. The move will permit the Bureau to plan new buildings to replace present research facilities, which over the past 50 years have become inadequate for current needs.

The new site was selected after careful consideration as most suited to the special requirements of the Bureau's scientific and engineering programs. The choice was based upon a number of factors, including accessibility by railroad and highway as well as topography for certain technical projects.

Congress appropriated funds for site acquisition and preliminary planning early in June after details about the proposed site had been presented to House and Senate Appropriations Committees. Plans for the site have been given to the National Capital Planning Commission and to the Regional Planning Council, and it is expected that these groups will work with the Bureau in utilizing the land. The General Services Administration will participate in planning and will supervise construction. Transfer of operations to the new location is expected to be completed in about five years.

In addition to its Washington laboratories, the Bureau maintains a major research center in Boulder, Colorado and 20 widely scattered field stations.

Borden's Granted Rights to Fischer Formaldehyde Process

The Borden Company's Chemical Division has been granted exclusive rights to the Karl Fischer formaldehyde process.

Under the terms of the contract with Fischer's West German engineering firm, Borden's may also license other producers, some of whom had been negotiating for US rights. Borden's first contracted with Fischer in 1955 to use the process in limited production on a royalty basis, and began seeking exclusive rights at that time.

The new system reportedly will provide an increased yield, and lower utility and steam requirements for processing. A 93 percent yield is anticipated, as compared with the national average of 82 to 88 percent.

In commercial formaldehyde production, methanol is vaporized and oxidized by air through the action of a contact catalyst. Borden's, already a major producer, uses formaldehyde in its manufacture of synthetic resins. It also sells it commercially. Resins produced by Borden's in combination with formaldehyde include phenol, urea and resorcinol.

Borden's is increasing its formaldehyde plant total to five with new construction in Kent, Wash, and Fayetteville, NC. On completion of these plants, total production will be more than 200 million pounds per year, it is stated.

New Coatings Group Organized

A new coatings group known as the Midland Coatings Society, has been organized in the Midland, Michigan area. At the present time membership is drawn principally from The Dow Chemical Co and Dow-Corning Corp located in the area. The membership consists of personnel directly or indirectly concerned with the coatings field, covering a broad range of interests such as polymer research, application research, technical service, production, market research and sales. Textiles, paint, paper, and maintenance will be among the fields covered in the yearly programs. The main objectives of the group are 1) to stimulate deeper and broader interests in the various phases of the coatings industry as a result of the growing activity shown in this area and 2) to foster closer professional and personal relations among the coatings personnel.

The group will hold about six scheduled meetings during the fiscal year. The programs will be centered on outside speakers qualified to cover the various phases of the industry and will also include occasional area group discussions. The first official program will be held in October.

Price of Rhonite 610 Increased

An increase of one cent a pound in the prices of Rhonite 610, monomeric urea formaldehyde paste used as a crushproofing and stabilizing agent for cotton and rayon, has been announced by Rohm & Haas Company, effective August 1.

The new schedule of prices is as follows: minimum truckload of drums, 9½ cents a pound; less than truckload in drums, 10 cents; in small quantities, 20 cents. Prices are fob Philadelphia, Pennsylvania, with minimum transportation charges prepaid and allowed to destination on shipments of drum quantities or more east of the Rocky Mountains.

Tetrine Prices Reduced

The prices of ethylenediamine tetraacetic acid (Tetrine®) and its salts have been appreciably reduced by The Glyco Products Co, Inc, Empire State Building, New York.

These products are finding increasing use in removing metallic contaminants from water used in processing oils, textiles, detergents, etc.

Industrial Textiles Market Weeks Planned

Formation of the National Council of Industrial Textiles, Inc, was announced recently by M J Lovell, its director. Organized as a service to the industry, the Council is primarily designed to provide an annual marketplace for the industrial textile industry's many products, and will also serve as a meeting place for its technicians, and a forum for the exchange of industry ideas. Headquarters for the newly-formed group will be at 112 West 34th St, New York.

"It is a little known fact that 30% of all textiles produced in the United States are for industrial end-uses," Mr Lovell said, "and the Industrial Textiles Council was formed in response to a widespread demand to periodically assemble the industry's products in one central place as a convenience for its many users, something which has never been done before."

The facilities of the New York Trade Show Building have been engaged for a week in May, 1957. There, it is planned to bring together all segments of the industrial textiles industry into one great showing of its varied and ramified products, all under one roof. Plans are being prepared for industry panel discussions, merit awards for outstanding accomplishment, and "feature" days pointing up various aspects of industrial textiles. "A specific and more detailed method of operation will be announced early in September," Mr Lovell added.

Permut to Address NY Pigment Club

The opening meeting of the New York Pigment Club for the 1956-57 season will be held Thursday evening, September 13 at Fraunces Tavern, Broad & Pearl Streets, New York. As is customary, dinner will be served at 7:00 PM followed by a business meeting and lecture.

The speaker for the evening will be Aaron Permut, consulting chemist and director of Solitone Laboratories, Hasbrouck Heights, NJ. Mr Permut's subject will be: "The Pigment Manufacturer's Role in Textile Printing."

In honor of the Perkin Centennial Celebration, which will be held during the same week, the Club is inviting the members of the Dry Color Manufacturers Association to attend the meeting. The meeting will also be open to all others attending the Centennial who have an interest in the pigment printing of textiles.

"Who's Who in Fashion" to Honor Outstanding Persons

Manufacturers and designers who have contributed to the fashion industry with marked distinction are to receive their individual acclaim upon publication of "Who's Who in Fashion," a 1000-page compilation singularly dedicated to the world of fashion.

The 1957 Edition will appear in December of this year and will include outstanding names in the fields of men's wear, women's wear, children's wear, accessories, etc.

Everett Cromwell English, managing editor and Earl Miller, research director of the publisher, Who's Who in Fashion, Inc, 576 Fifth Avenue, New York, will notify, during the next few weeks, the several thousand persons accepted for inclusion by the board of directors.

LTI to Observe Perkin Centennial

Lowell Technological Institute, participating in the international 1956 observance of the Perkin Centennial, will hold a gala three-day celebration Sept 26 through 28.

During that period a lecture and display of rare books will be featured, and at a special convocation honorary degrees will be conferred upon men famous all over the world in the fields of science, industry, and public service. Dedication of one of the newest buildings on the Lowell, Mass campus will take place, and the program will culminate in an Open House on Friday, Sept 28, marking the first time since 1937 that such a public open-house invitation has been extended.

Twofold purpose of the affair is to show to the public the tremendous growth and development of the Institute, particularly within the past decade, and at the same time to honor the late Sir William Henry Perkin, discoverer of the first synthetic dye—mauve—100 years ago at the age of 18, while experimenting in a makeshift laboratory in the basement of his London home. Sir William himself was among the visitors to the campus—then the Lowell Textile School—50 years ago.

Cyanamid Scholarships for '56-'57

American Cyanamid Company has announced the granting of 17 undergraduate scholarships and 15 graduate fellowships in chemistry and chemical engineering for the academic year 1956-57.

Under the undergraduate scholarship program, junior or senior students, selected by their university or college authorities, will receive $600.00 each for the academic year. The school receives $300.00 for unrestricted use by the chemistry or chemical engineering department.

The fellowship program includes $1,500.00 plus full tuition and laboratory fees to graduate students in their final predoctoral year. The school's chemistry or chemical engineering department receives $300.00 for departmental use.

These Cyanamid awards are part of the company's growing program of aid to education, which, at present, totals three-quarters of a million dollars annually. Recently the company sponsored four college scholarships in chemistry, chemical engineering and related sciences under the National Merit Scholarship Program.

Cyanamid also has a cooperative program with educators to make available personnel and resources to assist students in their science education.

Vat Color Sales Training Course

Believing that informed selling is the best selling, USF-Aspinook-Arnold, finishing division of Gera Corp, recently launched its free Vat Color Sales Training Course in Decorative Fabrics for retail store personnel.

The Vat Color Sales Training Kit, designed for use in the course, was a featured offering in 125 converters' showrooms across the country during Market Week, June 11th-16th. A full-color, silk-screened floor display, 40″ x 30″ and framed in natural birch, with pockets carrying literature and material on the USF-Aspinook-Arnold Sales Training Program, presented the offer to visiting buyers. Flyers, with detachable post cards, were provided for store or department buyers to fill out, requesting the Sales Training Kit and specifying the number of sales people for whom material is required. Each kit is tailored to order, and contains sufficient material for each member of the department.

Workshop technique has been followed throughout the entire course, which consists of six in-store meetings. Six fully developed guides for these in-store meetings have been worked out to help the department manager or sales training director in conducting the meetings. The same material and technique is applicable to all stores—large or small. Provision is also made to include copy writers, display men, advertising departments,

and decorating departments in the training program.

The titles and purposes set out in the six meeting guides give an outline of the course:

1) *Sell Color Confidently.*
The purpose of this first meeting is to develop in sales people an understanding of the importance of lasting color in today's decorative fabrics, and to acquaint sales people with the vat color story.
2) *Develop Your Color Sense.*
The purpose of this meeting is to develop in sales people a feeling for color and color relationships; and to provide practice in applying basic principles of color harmony and contrast to decorative fabrics in the department.
3) *Put Color to Work.*
In this meeting, sales people, through practice, are taught to develop skill in selecting fabrics that meet the customer's decorative requirements.
4) *Merchandise Your Facts.*
Here the purpose is to develop an understanding of the proper use of merchandising information as a selling tool; and to provide practice in analyzing the facts about decorative fabrics for the customer benefits represented.
5) *Turn The Spotlight on Selling.*
This meeting is designed to develop awareness of basic selling techniques that make merchandise benefits real and appealing to customers.
6) *Selling in Action.*
In this wind-up meeting, sales people are taught to apply and interpret merchandise facts in practice selling, with the highlight on selling techniques that enter into a sale.

Besides these Meeting Guides, the kit contains:

"YOUR GUIDE TO SELLING COLORS THAT LIVE IN DECORATIVE FABRICS"—a 16-page booklet filled with facts and practical selling information. This is the "text book" used throughout the entire training, and one is included for each sales person, as specified in the request for the kit.

A how-to-do plan for getting the most out of the Vat Color Decorative Fabrics Training Kit.

The material is designed to aid the retailer develop in his sales personnel an appreciation for the value of lasting color in decorative fabrics; show sales people how to present the benefits of vat colors to customers; provide sales people with basic color, fabric and selling know-how; and enable sales people to give superior service through intelligent understanding of their customer's decorative requirements.

This new effort is interlocked with the over-all USF-Aspinook-Arnold campaign to the converters and retailers of America in an integrated educational, merchandising and advertising program prepared by the Robert B Grady Company.

"Industry reaction to the Vat Color Sales Training Program has been most encouraging," according to R W Smith, vp in charge of sales at USF-Aspinook-Arnold. At the request of executives of the leading decorative fabric converters, more than 500 of their salesmen have received kits for their own use and as a selling tool with stores. A mailing of the flyer, offering the sales training kit and with detachable return-postage order-card affixed, has gone out to more than 6,000 key buyers and sales training directors. Resident buying offices have been given the opportunity to offer the course of training to their member stores.

TTMC Acquires Rights to Compactor Process

Tubular Textile Machinery Corporation of Woodside, New York, manufacturer of Tube-Tex equipment, has acquired the exclusive knitting industry rights to the Compactor Process. The Process was invented by Richard Walton of Boston, Mass. The method is one designed to effect maximum shrinkage control on textile materials and is already in use on woven fabrics.

Basic method and apparatus patents have been allowed in the United States and have been applied for in the most important foreign countries.

Tube-Tex officials point out that the growth of the home laundry in which the average housewife utilizes automatic washing and drying equipment has brought about the necessity for improving fabric stability. The use of domestic-type laundering equipment subjects knitted garments to one of the most severe shrinkage mediums known. To overcome this problem Tube-Tex representatives feel the Compactor Process holds promise for the ultimate in mechanical preshrinkage of knit fabrics. Because shrinkage has long been one of the most troublesome factors to control in the finishing of knit goods, a special group of Tube-Tex engineers and technicians is being assigned to the project of integrating a Walton Compacting Machine into commercial knit goods treating and finishing procedures.

Shrinkage tests have been made for Tubular Textile by Fabric Research Laboratories, Inc, Dedham, Mass, on the inventor's original model. Results of these tests and subsequent ones made at the Tubular Textile laboratories are said to indicate that the Process will be effective on every type of knit fabric, regardless of construction or yarn content.

Trials that were made on circular knit cotton underwear fabric reportedly indicate that it should be possible to completely control by mechanical means the shrinkage in this type of fabric. In a study of results to measure the effectiveness of the treatment, laundering tests were made on treated and untreated material. The following results were reported:

Balbriggan fabric 22-cut 30/1 cp

	Length Shrinkage	Width Shrinkage
Untreated	−13.4%	+1.8%
Compacted	− 1.8%	+1.5%

1 x 1 Rib 12-cut 36/1 cp

	Length Shrinkage	Width Shrinkage
Untreated	−15.7%	−2.1%
Compacted	+ 0.2%	−1.1%

The above wash tests were made using a tumble wash followed by tumble dry.

The Compactor Process, as well as the requirements for its commercialization for knit fabrics, has been thoroughly investigated by Tube-Tex engineers. This research has shown the original woven goods equipment must be properly adapted to cooperate with standard knit goods procedures to produce a complete and effective system for commercial treatment of knit fabrics.

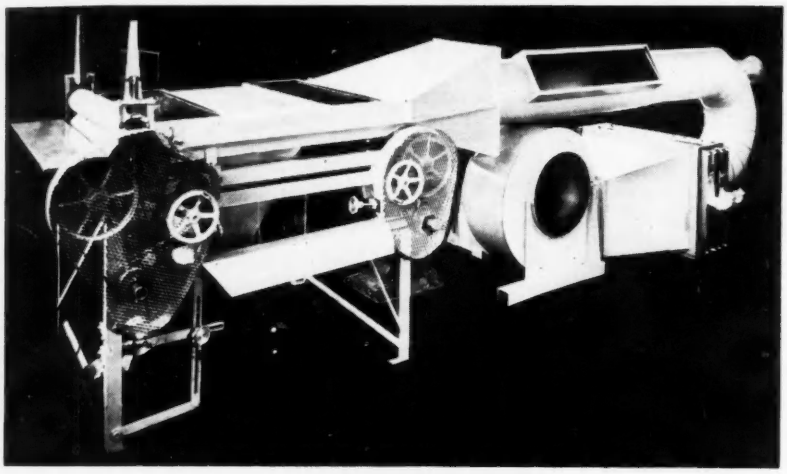
The Walton Compactor invention is said to produce the same excellent results in two layers of fabric as it does in one. In its simplest form, the unit's basic elements can be described as consisting of two rolls and a blade. Cloth is fed between the blade and first roll making contact with both. As the cloth moves between the stationary blade and revolving roll, it is forced into contact with a second roll revolving at a slower speed than the first. The compacting of the material takes place between the point of emergence from the blade and the point of contact with the slower turning roll.

Tests indicate that the Process is most effective if conducted in the presence of moisture. This will require a complete moisture control system.

Tube-Tex engineers are at work on a project to set up a pilot machine in their Woodside plant.

Plans for marketing the process have been deferred pending completion of design work. The process offers such promise, however, that it will be coupled with a consumer trade-mark and probably a productive increment charge will be found appropriate.

• NEW PRODUCTS AND DEVELOPMENTS •



Aero-Dyne Dryer

Aero-Dyne Dryer

The Aero-Dyne Dryer, a new, patented tubular knit goods dryer, has been introduced by Joseph Pernick Co, Inc, Maspeth, NY.

The dryer operates continuously in a horizontal plane, and is said to require relatively little floor space (approx 5′ x 16′). Fabric is fed in at one end in rope form as from an extractor. It is dried by hot air passing over and through it in a series of opening discs and spreading arrangement whereby the dry width can be set to facilitate calendaring and give best results with characteristics desired in subsequent operations.

This dryer, now in operation at S Augstein Co, College Point, NY, is said to have shown excellent results on all types of fabrics, both plain and fancy, made of a wide variety of fibers including cotton, wool, synthetics and blends. Speeds of up to 15 yds per minute have been obtained along with the important elimination of all types of stick and crow's feet marks, it is reported. The fabric is delivered in either a roll or flat folded.

Tests reportedly have shown that, by drying the goods to desired width, the handle, appearance and shrinkage control have all been improved considerably.

The machine itself is said to be simple to operate and can be easily installed.

New Seam Inspecting, Sewing, and Winding Machine

Birch Brothers, Inc, Somerville, Mass, has announced a new seam inspecting, sewing and winding machine for the inspection of seams in large diameter rolls of cloth, as received from the gray mill and delivered to the finishing plant. It is said to permit the rapid inspection (130 to 260 yds per minute) of seams to ascertain if they need resewing before processing.

The machine consists of a let-off unit equipped with magnetic brakes, and is followed by a pair of upright stands on which the guide rolls, the automatic seam detector, the air-cushioned compensating roll, and the control panel are mounted. The seam detector is said to be sufficiently sensitive so that the seam is automatically stopped just before it reaches the railway sewing machine, which is also mounted on the uprights. This quick stopping is accomplished by means of magnetic brakes.

The railway sewing machine is fitted with a Merrow butt-seam head, with an arrangement for multiplying the number of stitches at the selvages of the fabric. As an alternative, the chain stitch head may be used.

On the delivery end, the machine is fitted with the necessary guide rolls, adjustable tension, scrimp bar, yardage counter, and a two-roll batcher, which is equipped with magnetic brakes.

Drive is of the variable speed motor type, through an automatic electric clutch of variable torque.

The machine reportedly eliminates the possibility of poor seams and consequent breakage of the seams with expensive delays, as well as permitting the detection of crooked seams which might cause wrinkles or distortion of the fabric in the finishing operations.

Sevron Orange G; Ponsol Gray N Double Paste

Two new dyes have been announced by the Du Pont Company. One, Sevron Orange G, is an addition to its line of cationic dyes for Orlon acrylic fiber, and the other, Ponsol Gray N Double Paste, is an anthraquinone vat dye, for use on cotton and rayon.

Ponsol Gray N produces a shade bluish-gray to black. It is said to be of value for making medium gray to charcoal gray shades for use in dress goods, shirts, and industrial uniform materials, or for other uses requiring good fastness to light, chlorine, washing and other dye-destroying influences. It is especially recommended by Du Pont for dyeing piece goods by pigment-reduction methods employing pad-jig techniques or the Du Pont Pad-Steam Continuous Dyeing Process.

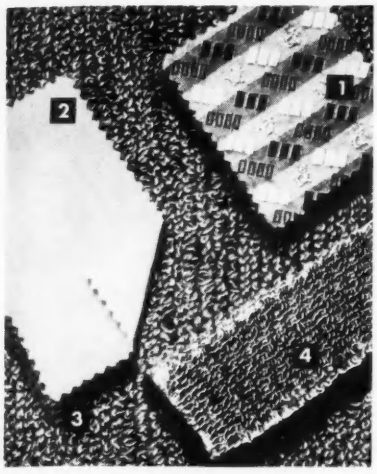
Sevron Orange G reportedly produces a bright yellow shade of orange on Orlon with very good fastness to light and wet processing. This dye does not exhibit prototropic properties, it is claimed, so it can be applied from acid or relatively neutral dyebaths over the pH range of 4.0 to 8.0 without affecting its shade. Sevron Orange G is particularly recommended by Du Pont for use in the production of certain heavy shades on Orlon type 42, such as bright shades of deep red in conjunction with the recently announced Sevron Brilliant Red B.

Hans C Bick Granted Patent on Nylonized Process

The US Patent Office has granted Hans C Bick, Inc, Reading, Pa, patent No. 2,746,941 covering the application of a chemical process "nylonized", by which a nylon finish is applied to nylon, acetate, and other woven or knit fabrics. The process is claimed to provide a method of bonding nylon to nylon and other textiles so that the finished fabrics will be more moisture absorbent, feel softer, and provide greater wearing comfort. Patent has been pending assignment of the process to Hans C Bick, Inc, by the inventors Robert S Horn, Jr, Doylestown, Pa, and Roscoe F Patt, Stony Creek Mills, Pa. Patent No. 2,746,941, dated May 22, 1956, covers both claims.

The patent covers the original process, trade-marked by Bick in 1952 as "nylonized".

No other similar process may now use the original formula.



Cross-Dyed Bemberg-Viscose Fabrics

An outstanding development in recent months has been the adoption of cross-dyed Bemberg-viscose fabrics. Interesting color effects that have been obtained in rugs, laces, tie fabrics, plushes, velvets and suitings, have proved themselves to be highly commercial, practical and marketable.

This development by American Bemberg is said to present to fabric design versatility and fluidity required in competitive selling today. The effects are obtained by conventional dyeing procedure and entail no special processing or added cost, it is claimed.

The piece-dyed tie fabric (number 1 in photo) illustrates a three-color combination with solid pink Bemberg warp, white viscose tissue filling stripe and black acetate tissue filling. This fabric is finished with a scrooping formula to produce the hand, as well as the appearance of yarn-dyed real silk.

Iridescent dyeings on transparent velvet of North American viscose pile, dyed violet, with silver grey Bemberg backing is demonstrated by number 2. The dyestuffs employed here are claimed to exceed all fastness requirements of this trade and are unconditionally recommended for resin finishing.

The red, green, and white textured tufted rug shown in number 3 is made of 2,500-denier Bemberg dream slub, plied with spun viscose and spun acetate yarns. Such rugs may be piece-dyed in an unlimited range of shades.

Number 4, a blue-brown and gold upholstery fabric of four low-cost fibers—Bemberg, viscose, acetate with cotton ground and backing, is entirely piece dyed. The acetate is colored a brilliant blue with the Bemberg a rich deep brown. At the same time the viscose and cotton are union dyed to a sparkling gold.

Aston LT

A new concept of chemical protection against accumulation of static charges has been created in the development of a new antistatic agent for synthetic fibers by the Research & Development Laboratory of the Onyx Oil & Chemical Company, Jersey City, NJ, according to F O Robitschek, president.

Designated Aston LT (LT for "lifetime") this new Onyx product is said to provide protection for the fabric and the garment for the useful life of the garment, regardless of how often it is washed or drycleaned.

Aston LT is said to be based on principles of polymer chemistry never before utilized. By surrounding every fiber with an invisible sheath, Aston LT reportedly gives the surface the properties of a hydrophilic fiber, and the hydrophobic core of the fiber under the protective layer is said to retain its valuable functional properties. Thus, fibers that are Astonized permanently combine the desirable properties of both types of fibers—the comfort, absorbency and resistance to static build-up of the natural fibers, and the strength, dimensional stability and crease resistance of the synthetic, it is claimed.

Aston LT reportedly will finish efficiently every type of fiber: nylon and other polyamides; Dacron and other polyesters; Orlon and other acrylics; Dynel and other vinyls, and Arnel triacetate fiber. It is said to be easy and economical to apply.

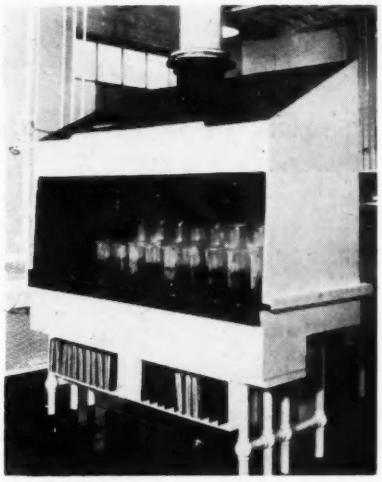
Onyx Oil & Chemical will display Aston LT for the first time at the Perkin Centennial celebration at the Waldorf-Astoria Hotel, Sept 10-15.

Hystrene 18-12

Hystrene 18-12, a new fatty acid product derived from marine raw material with possibilities in the manufacture of high-quality specialty fatty acid derivatives, has been made available by the Chemical Division of The Humko Co, 1702 N Thomas St, Memphis, Tenn. The manufacturer believes this to be the first time a fish fatty acid having as low an iodine content value and color has been offered on a commercial basis.

Hystrene 18-12 is currently available in 50-lb multiwall paper bags in commercial quantities at competitive prices.

Typical analysis: titre, 52.9°C; iodine value, 0.18; acid value, 199.4; free fatty acid, 101.1; unsaponifiables, 0.1%; color, 2Y-0.2R (Lovibond 5¼" column). Component acids: C_{14}, 6%; C_{16}, 36%; C_{18}, 28%; C_{20}, 18%; C_{22} and higher, 12%.



This laboratory fume hood is one of many different sizes and shapes being offered by the Haveg Industries, Inc, Wilmington, Del. They are said to provide resistance to the corrosion of a wide variety of acids (including even hydrofluoric in some materials) salts, alkalis, alcohols, esters, ethers, and hydrocarbons. As part of complete fume duct systems made entirely of plastic, these hoods and reaction cabinets reportedly offer service superior to galvanized or black iron and in many uses superior even to stainless steel, often at substantially lower cost. These hoods are offered in a variety of standard and special sizes with fume ducts and exhaust systems made up of standard size duct and fittings. Bifurcator housings, also of corrosion-resistant plastic, can be made an integral part of the overall exhaust system.

Depcopon NIA

The De Paul Chemical Co, Inc, 44-27 Purvis St, Long Island City 1, N Y, claims to have successfully combined the advantages of the nonionics and anionics in one detergent with the introduction of Depcopon NIA, its newest development in the field of surfactants.

Depcopon NIA has a pH of about 7, and reportedly can be used under both strongly acid and strongly alkaline conditions. It is said, therefore, to be compatible with anionic and nonionic compounds, and it may also be combined with some cationic compounds without danger of precipitation.

Because of the forementioned properties, Depcopon NIA reportedly can be used on a much wider range of fibers, cottons, wool, silks and synthetics. It is said to have excellent properties, particularly in the scouring of synthetic knitwear. In the bleach bath, in kier boiling, as a scour, wetting agent and print wash, it shows excellent foaming and will not be affected by hard water, it is claimed. It is said to rinse easily and is stable even at temperatures above the boil.

Arogums

A new family of treated potato starches, which is said to offer greater viscosity stability, has been introduced by Morningstar, Nicol, Inc, 630 W 51st St, New York. It is claimed that these new products, the Arogums, are already bringing quicker cooking, better luster, greater retention, more flexible coatings and improved penetration to the textile and paper industries, and to other manufacturers concerned with sizing, coating and finishing.

The new potato starch derivatives are made in the Aroostook Potato Products Inc plant of Morningstar, Nicol by newly developed oxidation processes. Similar "chlorinated" starches from cereal bases have existed for some years, but the new Arogums are claimed to be superior with respect to: 1) larger granule size, 2) lessened set-back (reversion to the original gelation after the cook), and 3) narrower limits of viscosity variation. In relation to starches converted by enzyme action or acid treatment to reduce viscosity and ropiness, the Arogums are said to have the valuable property of markedly less loss through conversion to sugar.

It is reported that the Arogums can be supplied to specification as regards maximum viscosity and the constancy or rise or fall of that viscosity with continued cooking and subsequent cooling. Five grades are already standard to meet present-day requirements in those industries which desire higher solids contents in batches of workable fluidity.

Typical Brabender viscosity curves during cooking are shown in Figure 1 for a variety of Arogums in comparison with raw potato starch. Figure 2 shows the large granule size characteristic of the product.

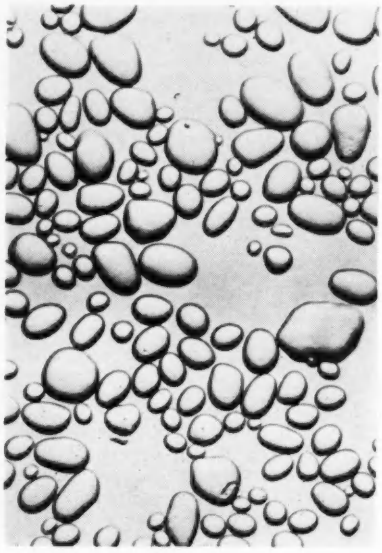


Figure 2
A typical Arogum (uncooked) X 350.

Because of the chemical nature of this new starch modification, lower temperatures and less time are required to develop the viscosities and consistencies needed for most work, it is claimed. Cooks as low as 150 F and 10 min are reported possible.

Some Arogums are available with increased resistance to acids; with various types of body, from very low viscosities to consistencies greater than attainable from untreated potato starch and varying from short to very long.

The product is shipped dry in hundred-pound multiwall paper bags.

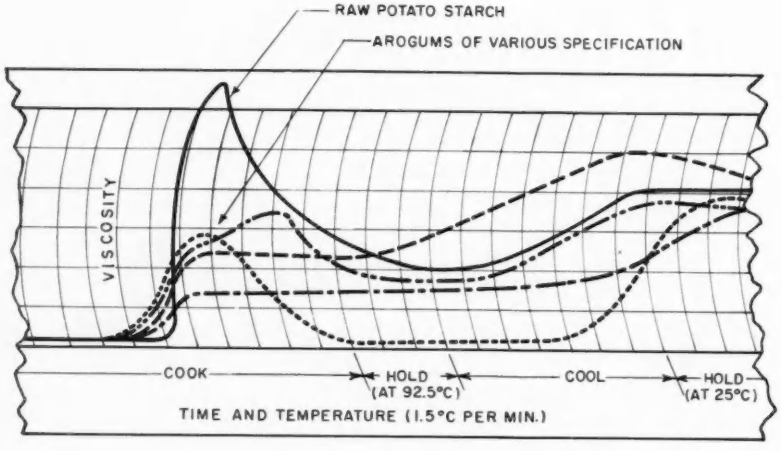


Figure 1
Typical viscosity stability curves (Brabender Amylograph) during a standard cook-hold-cool cycle (raw potato starch and 4 Arogums derived therefrom).

New BASF Dyes

Nova Chemical Corp, 153 Waverly Place, New York 14, N Y, distributors in the USA of products of Badische Anilin- & Soda Fabrik AG, Ludwigshafen a Rhein, Germany, has announced the release of circulars illustrating five new Basolan Fast dyestuffs. The Basolan trade name is for selected acid dyes suitable for wool and nylon. The following types represent a new manufacture of five products which are said to have excellent fastness to light, brightness of shade, and good all-around general fastness properties: Basolan Fast Yellow GGL, Basolan Fast Yellow GRL, Basolan Fast Orange GL, Basolan Fast Orange RRL, and Basolan Fast Red GL.

Also, as an addition to the line of neutral-dyeing premetalized colors, the BASF is now manufacturing an additional type called Ortolan Black G Special. The product has outstanding fastness properties and produces union shades on wool and nylon blends, it is claimed.

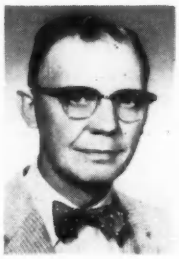
Neutral-dyeing premetalized colors require, in some instances, a brightening of their shades, and for this purpose the BASF has brought out four products which can be dyed together with the neutral-dyeing premetalized Ortolan dyestuffs, and which reportedly show an outstanding brightness of shade and good fastness properties. The line of Ortol dyestuffs comprises the following four products: Ortol Yellow F4G, Ortol Scarlet FG, Ortol Blue FG, and Ortol Green B.

To the line of Vialon Fast Colors for the dyeing of nylon, and union shades of nylon and wool, BASF has released a new type called Vialon Fast Violet 2R. This is a reddish violet shade which has been missing in the line of Vialon Fast Colors and is in the range of other Vialon types as regards performance and fastness properties.

Trinoral

A new aluminum salt, Trinoral, for use in the preparation of water-repellant compounds for textiles, has been introduced by Rhodia, Inc, 60 E 56th St, New York 22, N Y. It is stated that the new product, aluminum triformate, can advantageously replace such chemicals as aluminum diformate, aluminum acetate, etc, in the preparation of water-repellant compounds. The purity of Trinoral is said to make it very stable in compounding and, since it does not require the addition of acetic acid, it is reported to be economical and efficient.

• NAMES IN THE NEWS •



Espelin

Milpac Dyeing Co, Inc, Brooklyn, NY, has named **William H Espelin** dyehouse superintendent.

Mr Espelin has been with Ciba Co, Inc for the past 20 years.

Robert L Greason has been appointed assistant advertising manager of American Cyanamid Company's Organic Chemicals Division and Pigments Division. Mr Greason previously had responsibilities in the company's textile resin advertising.

Simultaneously, **Martin B Friedman** was appointed assistant to the advertising manager of Cyanamid's Organic Chemicals Division. He will be in charge of advertising and sales promotion for the company's Textile Resin Department.

F L Pepper and **M H Mettee** have been appointed assistant managers of Cyanamid's Dyes Department at Bound Brook, NJ.

Also announced were the promotions of **G A Jonic** and **S S Hockridge** to the respective posts of manager of the Metropolitan Territory and salesman in the Metropolitan Territory, covering New York and Northern New Jersey.

Mr Pepper joined Cyanamid in 1932 and moved to the Dyes Department in 1935 as a salesman. Prior to his new appointment, he had been technical manager of the department. Mr Mettee joined Cyanamid's Dyes Department as a salesman in 1932. He transferred to the Metropolitan Territory and was appointed Metropolitan Manager in July, 1953.

Mr Jonic, previously a salesman in the Metropolitan Territory, joined Cyanamid as a trainee in July 1937. He joined the Metropolitan Territory staff in 1946 after military service.

Mr Hockridge has worked as a print chemist and salesman for Arnold Print Works; Stein Hall & Company; and US Finishing Co. He joined Cyanamid in 1954, and has been manager of the Print Laboratory in the Dyes Department.

George C Lommel fully retired on July 1st after a long career in the dyestuff industry.

A graduate of Cooper Union, in 1912 he joined A Klipstein & Co as a laboratory technician. Two years later he took charge of the dyestuff laboratory of the Commonwealth Color & Chemical Co, then situated in Brooklyn, NY. In 1916, he helped organize the United Chemical Products Corp, Jersey City, NJ, after which he joined Dicks David Co in a sales capacity. In 1920 he went with John Campbell & Co where he became sales manager and vice president, remaining there until 1938 when it was taken over by American Cyanamid Co. He remained in the sales department for the last 18 years until full retirement was mandatory.

Mr Lommel, whose main hobbies are travel and stamp collecting, has three sons and seven grandchildren.

Harris

Earl F Harris has been elected president of the Rodney Hunt Machine Co, Orange, Mass.

Joining Rodney Hunt in 1946, Mr Harris became vice president of the company in 1947 and executive vice president in 1952.

Carl C Harris, president since 1938, will continue to serve the company as chairman of the board.

Don Smith, former assistant finisher at Lyman Printing & Finishing Co, Lyman, SC, has joined the sales staff of the Harry Miller Corp, Philadelphia, Pa. He will service accounts in South Carolina.

Howard L Jenkins retired July 1st as manager of the Diastafor Department of Standard Brands Inc with 36 years of service to his credit. Mr Jenkins pioneered the use of Diastafor desizing agent by the textile industry.

W Douglas Smith, formerly assistant to Mr Jenkins, has been appointed sales manager of the Diastafor Department.

At a special meeting of the board of directors of Morningstar, Nicol, Inc, in New York, last month, three new positions were filled and three new officers were elected.

Earl C Lenz, vice president of Sales, a veteran of 24 years' service in the Sales Department was newly elected to the board. Also elected to the board were **Sam Schuller,** vice president and technical director, located at the Chicago Paisley Products, Inc, Division of his company, **Samuel J Lowenstein,** attorney, and **Thomas Wood Morningstar.** Present board members include **Joseph Morningstar** as board chairman, **George J Muller,** president, and **Murray Stempel,** executive vice president.

New officers include **Laurent J La Brie,** formerly assistant vice president, who now becomes vice president in charge of technical co-ordination, **Edwin M Hillary,** vice president in charge of production, and Thomas Wood Morningstar, assistant vice president and secretary.

The new board and officers later toured the firm's new plant at Hawthorne, NJ, which is being enlarged and modernized in a million dollar expansion program, due for completion in October. Morningstar, Nicol, Inc recently established new plants in Los Angeles and Redwood City, Calif for their adhesive and resin producing subsidiary, Paisley Products, Inc.

G G Bierwirth has been named division manager — Personnel Relations of the Dyestuff and Chemical Division of General Aniline & Film Corporation.

Mr Bierwirth, formerly director of employee relations of the Ingersoll Products Division of the Borg-Warner Corporation at Chicago, will coordinate the personnel activities at all plants of the Dyestuff and Chemical Division, the Central Research Laboratory, sales branches and the Division's general offices in New York.

Bierwirth

Midwestern sales headquarters for Celanese Corporation of America's industrial textile products have been established at 22 West Madison Street, Chicago, Ill, with **Arthur E Berngen** in charge of a 12-state sales area.

Fortisan-36, the new Celanese industrial fiber, will be among the five fibers offered for electrical and mechanical uses, nonwoven applications, fabrics, vinyl-laminated materials and rubber goods. The other fibers are Arnel triacetate, acetate, regular Fortisan and viscose rayon.

The Council of The Textile Institute, Manchester, England has named **George H Hotte** convenor of the USA panel. Mr Hotte, who is director of fiber sales and service, National Aniline Division, Allied Chemical and Dye Corporation, has served as acting secretary of the panel for several years.

As convenor, Mr Hotte will preside over meetings of the American panel and take charge of all communications.

Coy Gray, graduate student in textile chemistry, has received a continuation of a $1500 Dow-Corning Fellowship for study at Clemson College through January.

The fellowship, awarded to Mr Gray last September by the Dow-Corning Corp, Midland, Mich, includes tuition and a research supply fund applicable to thesis work.

Gray, a 1952 Clemson graduate in textile chemistry, will complete his MS requirements in January. He is working in the field of silicones as part of his graduate program.

Lloyd E Parks has been appointed representative for Soluol Chemical Co, Inc, in the Southeast.

Dr Parks was formerly with Sharples Chemicals, Inc for 9 years where he advanced from research chemist to products manager. More recently he spent 5 years as vice president and general manager of the Bee Chemical Company in Chicago.

Dr Parks will work through Parks and Company, 205 South Church Street, Charlotte, NC.

Parks

Donald L Elbert, James E Farrington, and John R Holsten have been appointed to positions within the Research and Development Division of The Chemstrand Corporation.

Mr Elbert is located in the nylon spinning group of the Development Department. Prior to joining Chemstrand, he was an instructor of physics at the University of Louisville.

Mr Farrington is located in the Acrilan dyeing research group of the Dyeing and Finishing Department.

Dr Holsten is located in the process organic group of the Research Department.

Harley

Alliance Chemical Corp, Newark, NJ, a division of the Andover Company, has announced the appointment of **John A Harley** as New England representative.

From 1946 until the present, Mr Harley has been Ciba Co, Inc's representative in New England.

Fantry

John J Fantry has joined the Textile Colors Division of Interchemical Corporation. He will act as a technical representative in the Southern Sales District of the Division with headquarters at Lee Street, Rock Hill, SC.

For the last nine years Mr Fantry has been connected with the Warwick Chemical Company Division of Sun Chemical Corporation, most recently as Suntone Service Manager in the Southern District.

James A Bralley has been named director of research for the A E Staley Manufacturing Company, Decatur, Ill.

Dr Bralley has been with Rohm & Haas Company for the last 10 years.

OBITUARY

The late Malcolm MacKenzie

MALCOLM MACKENZIE, a charter member and former vice chairman of the Piedmont Section, AATCC, died July 17th in a San Francisco hospital following a heart attack. His body was cremated and brief services were held in that city, after which his remains were taken to Clearwater, Florida for burial, and memorial service.

Mr Mackenzie and his wife were touring the western part of the country when he was stricken.

Prior to his retirement several years ago, he was southern representative of Sandoz Chemical Works, Inc, and before that superintendent of dyeing for the Cramerton Manufacturing Co.

Survivors include his wife, Mrs Elsie Mackenzie; a son, Malcolm, Jr; two brothers, Duncan and William; and two grandchildren.

ELMER C BERTOLET, SR, director of Chemical Laboratories at the Research Institute of Temple University, Philadelphia, Pa, died July 16 at his home in Philadelphia, at the age of 68.

Mr Bertolet was a charter member of the American Association of Textile Chemists and Colorists, and was at one time a national vice-president of the Association. He was also active in many committees, and was a past chairman of the Philadelphia Section of the AATCC. At the time of his death he was chairman emeritus of the Section. He was also a past chairman of the Philadelphia Section of the American Chemical Society.

Mr Bertolet had been a member of the Temple faculty since 1946. He was previously a member of the faculty of Philadelphia Textile Institute when it was known as the Philadelphia Textile School.

He was also a member of the board of Oehrle, Inc, textile manufacturers, of Philadelphia.

Mr Bertolet is survived by his wife, the former Aurelia Shoemaker; a daughter, Mrs Albert C Oehrle; a son, Elmer C, Jr, and three brothers and two sisters.

HAROLD A SWEET, director of the Industrial Division of Refined Products Corp, Lyndhurst, NJ, died recently following a brief illness.

A 1915 graduate of Syracuse University, Mr Sweet was a member of the American Chemical Society.

He was with the sales and sales development departments of General Dyestuff Co for 34 years, a pioneer in the sale of synthetic detergents, wetting agents and emulsifiers. Prior to joining General Dyestuff in 1931, he served as department head in the manufacturing division of General Aniline Works.

A Rot-Proof Military Sandbag———

(*concluded from page 542*)

problems of military supply by reducing the number of items. To set up various grades of sandbags runs counter to that objective.

Another important consideration is availability. A material to be suitable must be available in large quantities not only in time of peace but also of war. It would serve little purpose to specify a material, no matter how suitable it might otherwise be, if it could not be obtained in adequate amounts. In a few words, then, our problem is one of finding a rot-proof sandbag material which will be competitive in price with jute burlap.

This might appear to be an impossible goal were it not for a likely circumstance. In the event of war, we may be cut off from sources of jute, and be compelled to find other substitutes which, although no more resistant to rot, are nevertheless more expensive than jute. If such an event should occur, a rot-proof material would compete with any other available substitute for jute. Moreover, the difference in price between jute and domestic materials may decrease in war time since the price of foreign materials would not be subject to control by the Federal Government.

Of the materials we have investigated, the type holding the greatest promise of meeting all of the criteria of a suitable sandbag material is some form of modified cellulose. Partially acetylated cotton osnaburg bags have withstood 5 years of exposure to severe conditions for rot at Fort Belvoir, Virginia, and 2 years of exposure to solar radiation at Yuma, Arizona, without loss of serviceability. This materials is deficient, however, in two of the established criteria: availability and cost.

Commercial exploitation of the acetylation process for the peacetime market lags behind the quantity production that would be needed for a sandbag materials. Horeover, cost estimates of the cloth based on pilot plant scale operations are too high. However, some other form of modified cellulose may be the answer for a rot-proof bag — for example, cellulose acetate.

The production of cellulose acetate textiles is already an industry of considerable magnitude, and one that could be expanded to any desired production level. Costwise, a cellulose acetate textile compares favorably with any bag material available as a substitute for jute burlap even though a primary concern of the industry up to this time has been with textiles for wearing apparel. It seems, however, that by eliminating spinning and weaving operations designed to improve the appearance and hand of these fabrics and thus reducing the manufacturing operations to a minimum necessary to produce a cloth engineered for use in sandbags, the present prices of a suitable cloth of this material could be substantially lowered—perhaps brought within a price range which would permit its use as sandbag material. At present we are investigating this possibility with the assistance and cooperation of industry. Two of the largest producers of cellulose acetate textile fibers, one weaver and two bag manufacturers are cooperating in this project.

Abstracts

Dyeing of Man-made Fibers

Carmichael, N, *Can Textile J* **73**, 50-3, April 20, 1956.

Polyamides. There are two types in commercial use in any quantity: Nylon 66, based on adipic acid and hexamethylene diamine, and Perlon, based on caprolactam. Under the same conditions most dyes go on Perlon more rapidly than on nylon; the shade depth is similar, the transfer is similar, the ultimate depth or saturation value is higher on Perlon, and the fastness properties may be a little different on the two fibers depending on the individual dye.

The dye classes used on nylon include the disperse dyes, the acid dyes, including the half-metallized types, and the chrome dyes. Small amounts of vat dyes are used, certain direct dyes have advantages, and some azbic combinations are also applied.

Polyesters. The commercial types are Dacron and Terylene, which are practically identical. The disperse dyes are most widely used on these fibers, which cannot be practically dyed with water-soluble dyes. Dyeing is best carried out at 240-250°F. The addition of a "carrier" to the dyebath is recommended, and several types are described, some of which permit dyeing below 212°F, but apparently the ideal carrier has not yet been found.

Polyacrylics. There are two types, Acrilan and Orlon, with similar properties. Disperse dyes on Orlon 42 have poor build-up, but Acrilan can take them even up to a fair Black. The lightfastness of disperse dyes is said to be better on Orlon than on Acrilan. The cationic or basic dyes are widely used on Orlon 42; several new dyes of this family have lightfastness as high as 7. Acid and chrome dyes are suitable for dyeing Acrilan and are applied from a sulfuric acid dyebath.

The author also describes the application of these various dyes on combination fibers, such as nylon-cotton and Orlon-wool. Dynel and triacetate are also briefly discussed.—WHC

World Man-made Fiber Survey

Anon, *Textile Organon* **27**, 81-96, June, 1956.

The world production of man-made fibers reached an all-time record level of 5,579,000,000 lbs in 1955, a rise of 14% above the total produced in 1954. The 1955 total was composed of 4,533,000,000 lbs of rayon, 484,000,000 lbs of acetate and 562,000,000 lbs of noncellulosic man-made fibers. Rayon output increased 12½% above the previous year and acetate production was up 7%, while production of the noncellulosic fibers increased 35½%.

A table comparing world output of the man-made fibers with that of cotton, wool and silk shows that the man-made fibers in 1955 represented 20½% of the total world textile fiber output, compared with 19½% in 1954 and only 12½% in 1946.

The US was the world's largest producer of rayon and acetate, with a 1955 output of 1,261,000,000 lbs, or 25% of the world total. Japan was the second ranking producer in 1955, with an output of 732,000,000 lbs, or 14½% of the global output. Japan ranks as the leading world producer of rayon + acetate staple, however, with an output of 536,000,000 lbs last year. The US was second with 396,000,000 lbs. Other countries producing over 100,000,000 lbs of rayon + acetate in 1955, in the decreasing order of their production, were Western Germany, the United Kingdom, Italy, France, and Spain.

It is estimated that by the end of 1957 the world capacity for producing man-made fibers of all types will amount to nearly 8 billion pounds.

The Survey presents tables giving production figures for all of the rayon-producing countries from 1946 to 1956. There is also a directory of the world's producers of man-made fibers, in which the listing for each country is separated into 1) rayon and acetate, followed by 2) the noncellulosic fibers which are identified by type. Figures from the Communist countries (except Eastern Germany) are mostly omitted for lack of reliable information.

The leading countries producing the purely synthetic (noncellulosic) fibers appear to be the US, with at least 11 types; the United Kingdom, with 8; Japan and West Germany, with 5 each; and France, East Germany, Italy, and Holland, with 4 each. Nylon alone is being produced by 11 companies in the US and in 15 other countries besides, including such distant places as Egypt and Uruguay. —WHC

The Dyeing and Finishing of Orlon Type 42

Knight, B, *Textile J Australia* **30**, 1399-1402, January, 1956.

Orlon is du Pont's trade name for a series of polyacrylonitrile fibers, of which Orlon 81 is the continuous filament and Orlon 41 the staple fiber. Orlon 42 is a slightly modified form of 41 with improved dyeing properties.

Orlon 42 is resistant to mineral acids except in high concentrations. It withstands weak alkalis, but as the pH is increased, the nitrile groups are gradually saponified. Its resistance to weather is excellent.

The fiber is usually scoured at 170° F with a nonionic detergent and tetrasodium pyrophosphate or ammonia. After scouring it has a yellow tinge which must be bleached. For this purpose oxalic acid or sodium chlorite may be used. Optical bleaches can also be employed to improve the white.

Disperse dyes give good results in light shades, as they are easy to control, but heavier shades have disadvantages; in compound shades the dye with the greatest affinity for the fiber blocks the other dyes, and fastness to rubbing and washing is not good.

Basic dyes are widely used, producing a range of shades of excellent washing and rubbing fastness. Some types have a lightfastness of 4-5 to 6. They are applied at the boil in an acetic acid bath with the addition of a retarding agent for light shades. The heaviest shades obtainable, however, are with 1.8-2% of dyestuff.

Shades of black, navy, dark brown and maroon, as well as other shades of good fastness to light and washing, can be obtained with selected acid dyes by using the cuprous ion technique. Cupric sulfate and hydroxylamine sulfate (or other reducing agent) are first added to the bath, which is adjusted to a pH of 2-3 with sulfuric acid and heated to 160°F. After 15 minutes the dye is added and the temperature raised to the boil. Addition of a "carrier" (eg, o-phenylphenol) assists in the production of heavier shades.

As Orlon 42 is quite plastic at the boil, it is best to cool the bath very gradually when dyeing is completed, to avoid distortion.

A cationic softener is recommended in finishing, to obtain the high degree of softness associated with Orlon.

The principal uses for Orlon 42 in Australia appear to be in knit goods.—WHC

General Calendar

AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY, INC

Sept 5, Oct 3, Nov 7, Dec 5 (All meetings at the Vanderbilt Hotel, New York, N Y).

AMERICAN OIL CHEMISTS SOCIETY

Spring, 1957 (Spring meeting, New Orleans); Sept 30-Oct 2, 1957 (Fall meeting, Cincinnati); Apr 21-23, 1958 (Memphis); Oct 20-22, 1958 (Chicago); Spring, 1959 (New Orleans); Fall, 1959 (Los Angeles).

AMERICAN SOCIETY FOR TESTING MATERIALS

Sept 16-22—2nd Pacific Area National Meeting and Apparatus Exhibit, Hotel Statler, Los Angeles, Calif; Oct 16-19—Fall Meeting of Committee D-13 on Textiles, Warwick Hotel, New York, N Y.

THE FIBER SOCIETY

Fall Meeting—Sept 6-7, Warwick Hotel, New York, N Y, Spring Meeting — May 1-2, 1957, The Clemson House, Clemson, S C

THE INSTRUMENT SOCIETY OF AMERICA

11th Annual Instrumentation-Automation Conference and Exhibit—Sept 17-21, New York Coliseum, New York, N Y

LOWELL TECHNOLOGICAL INSTITUTE

Sept 26-28 (Perkin Centennial observance and open house).

NATIONAL COTTON COUNCIL OF AMERICA

October 3-4 (Chemical Finishing Conference, Hotel Statler, Washington, DC); Feb 28-Mar 1 (Cotton Research Clinic, General Oglethorpe Hotel, Savannah, Ga).

PERKIN CENTENNIAL

September 10-15. Waldorf-Astoria Hotel, New York, N Y.

THE QUARTERMASTER ASSOCIATION

Annual Convention — Oct 27-28, Conrad Hilton Hotel, Chicago, Ill.

SOUTHERN TEXTILE EXPOSITION

19th Exposition, Oct 1-5, Textile Hall, Greenville, S C.

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES

Sept 11, Oct 9, Nov 7 (Palm Terrace Suite, Hotel Roosevelt, New York, N Y).

TEXTILE QUALITY CONTROL ASSOCIATION

September 27-28—Fall Meeting, Sedgefield Inn, Greensboro, NC

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